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# GOVERNMENT ACTIVITIES IN THE NORTH

- 1962 -



ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT







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1962

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Advisory Committee on Northern Development,  
Department of Northern Affairs and National Resources,  
Ottawa, Ontario.

June, 1963.

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to ensure the maintenance of discipline of action  
relative to the use of the military instrument  
to the point of view of the political situation  
in that area.

### Review of the Situation

Reports have been in the Committee on a number of occasions  
that the situation in the north is becoming more and more  
serious.

A number of reports have been received by the Committee in the  
past few days. These reports indicate that the situation in the  
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The Secretary of the Committee on Northern Development  
(Chairman)

The Secretary of the Committee

The Secretary of the Committee on Northern Development

### ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT

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Responsibilities

To advise the government on questions of policy relating to civilian and military undertakings in northern Canada and to provide for the effective co-ordination of all government activities in that area.

Review of 1962 Operations

Reports were made to the Committee on a variety of matters dealing with defence and civilian developments in the north.

A number of northern problems were resolved by discussion in the Committee, and recommendations were made in relation to the establishment of government policy. Emphasis continued to be given to the need for scientific research in the north, and recommendations of the committee led to the establishment of a programme of grants to assist northern scientific research and the decision to conduct a research station at Inuvik. The membership of the committee was:

The Deputy Minister of Northern Affairs and National Resources (Chairman)  
The Secretary to the Cabinet  
The Under-Secretary of State for External Affairs  
The Deputy Minister of Transport  
The Deputy Minister of Finance  
The Deputy Minister of Mines and Technical Surveys  
The Chairman, Canadian Section, Permanent Joint Board on Defence  
The Chairman, Chiefs of Staff  
The Commissioner, Royal Canadian Mounted Police  
The President, National Research Council  
The Deputy Minister of Public Works  
The Deputy Minister of Citizenship and Immigration  
The Deputy Minister of National Health  
The Deputy Minister of Defence Production  
The Deputy Minister of Agriculture  
The Deputy Minister of Fisheries  
The Chairman, Defence Research Board



DEPARTMENT OF AGRICULTURE

Responsibilities Investigation of the agricultural potential in Northern Canada; research to determine the possibilities of gardening and farming; advice to other government agencies on agricultural matters in the Yukon and Northwest Territories, and other northern areas; soil, botanical and ecological surveys as required; study of the biology, distribution, and systematics of northern insects and plant diseases.

#### Long-term Plans

Continuation of agricultural research work on the Experimental Farms at Fort Vermilion, Fort Simpson, Inuvik, Mile 1019, and Fort Chimo; initiation of agricultural research at other centres in the north. Appraisal of agricultural potential on the basis of soil survey and surveys of native plants; agro-climatic studies on a continuous basis at most centres; surveys of insects, particularly the biting flies; collection of fungi in support of "Canadian Arctic Fungus Flora".

#### Review of 1962 Operations

Experimental work on field and garden crops, beef cattle, and poultry was continued at Mile 1019, Alaska Highway. Experiments included the production of cereal crops under various rotations and fertilizers, and the production of certain vegetables and flowers using plastic shelters and mulches essential for tender crops to reach maturity satisfactorily. Crops such as tomatoes, corn, peppers, beans, celery, etc., can now be grown to maturity under cheaply constructed crop shelters. Tests with various forages and carrying capacity studies of native and seeded pastures were continued. Work was begun to determine the feed consumption of beef cattle during the winter months in the new cattle barn and in the open feed lot constructed for this purpose.

At Fort Simpson experiments were continued with field and garden crops, which were studied in relation to climatic and soil conditions on the alluvial soil on the island. Ten acres of new land were cleared and broken along the Liard River for future experimental work on the brown and grey-wooded soils, the major soil types in the area.

A limited number of vegetables were again tested at Inuvik where permafrost has now receded considerably. When commercial fertilizers were used crops of cabbage, cauliflower, broccoli, carrots and other crops were grown with reasonable success. Contrary to all expectations, commercial varieties of strawberries over-wintered and some ripe fruit was collected at the time when the permafrost was about 6 feet below the surface.

At False River, near Fort Chimo, work was continued on the cleared land broken in different ways. Some vegetables were successfully grown in plastic-covered greenhouses, cold frames, under plastic mulches and in the open field. Barley and oat crops failed to mature because of the short frost-free season.



During the summer two separate entomological survey parties collected insects in the north. One group worked from Tek Junction, Alaska to Dawson, and up the Peel Plateau to the Ogilvie Mountains and the Canol road to Ross River. The other survey party continued with general insect collection at Lake Hazen, Ellesmere Island and began studies of the ecology and behaviour of biting flies, bumble bees, lepidoptera and their parasites. An important collection of nematodes was made and some rare fungi were found on specific plants encountered in the "desert of the north" where the summer rainfall is often negligible. Many biological specimens were brought out for further study and as exchange materials with universities and botanical institutions in Canada and elsewhere.

#### Plans for 1962

Field experiments will be continued at Mile 1019, Fort Simpson, Inuvik and at Fort Chimo. Research will be continued with beef cattle at Mile 1019. Various native and cultivated pastures will be compared followed by investigations of methods of winter feeding. At all centres the most important vegetables will be tested in the open, in plastic crop shelters, and under plastic mulches. The use of fertilizers and the role of water will be investigated. The recession of permafrost will be followed under various crops at Inuvik and at Fort Chimo. Some new trials with field crops and vegetables will be begun on brown and grey-wooded soils along the Liard River.

Entomological and botanical collections will be continued in the area around Lake Hazen in Ellesmere Island. If transportation becomes available, it is planned to send one botanist to collect plants at a number of DEW Line sites in the Northwest Territories and Yukon. Another botanist plans to collect plants and to continue with the ecological survey of reindeer ranges previously examined in 1957.

AIR TRANSPORT BOARD



Responsibilities

The licensing of air carriers to operate commercial air services; the economic regulation of air carriers; investigations and surveys relating to the operation and development of commercial air services in Canada; advising the Minister of Transport on matters relating to civil aviation.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1962 Operations

The fixed wing and rotating wing air transportation services required for the period July 1, 1961, to June 30, 1962, in the resupply of the Central and Eastern Sections of the DEW Line were provided to the Federal Electric Corporation by TransAir Limited, Nordair Ltd. and Okanagan Helicopters Limited. The same companies are providing these services for the period July 1, 1962, to June 30, 1963. USAF air transportation requirements for the supply of ADC sites in Labrador were provided by Okanagan Helicopters Limited (with Wheeler Airlines (1960) Limited) for the period July 1, 1961, to June 30, 1962, and will continue for the period up to June 30, 1963. Supervision of these contractual arrangements was continued and advice and liaison was provided with respect to air transportation required in connection with the Mid-Canada Early Warning Line.

The Board continued to handle applications to provide additional services in the North and licensed Pacific Western Airlines Ltd., TransAir Ltd. and Nordair Ltd. to serve Resolute on a non-scheduled unit toll basis via Cambridge Bay, Coral Harbour, and Foxe, respectively. Information was provided on the availability of air services in the North. The survey of Canadian Government transportation requirements in the Canadian North was continued with a view to meeting the requirements of five to ten years in the future.

Plans for 1963

Normal planning to meet responsibilities.

CANADIAN BROADCASTING CORPORATION

Responsibilities      To provide a radio broadcasting service to the people of the north and to broadcast programs about the north on its networks.

#### Long-term Plans

To improve the present broadcasting service on local stations, particularly in providing programs in the local Indian or Eskimo languages; and to provide a more adequate shortwave service.

#### Review of 1962 Operations

The opening of telecommunication and microwave circuits between Grande Prairie and the Great Slave Lake area on April 2nd enabled CBC Northern Service radio stations in that area to be connected directly with the Corporation's national radio network and to receive its programs. CFYK Yellowknife, CBXH Fort Smith, and CFHR Hay River became a community network known as the "Mackenzie Network" with CFYK as the program centre and CBXH and CFHR as unattended low power relay transmitters (LPRTs). This new and increased activity necessitated CFYK's moving from the basement of the Federal Building in Yellowknife to new and larger premises.

A broadcasting station was opened at Uranium City, CBDH, in January in fulfilment of a CBC undertaking to provide a service there on the understanding that it would be converted to an LPRT as soon as telephone circuits were completed to the "outside". This is expected to take place early in 1963 at which time the station will become part of the Mackenzie Network.

The Mackenzie Network broadcasts national network programs and also originates programs of interest to the area served by all the stations; news, weather reports, road reports, etc. are telephoned or wired to CFYK by stringers at Fort Smith and Hay River who also record on tape interviews, actuality reports, etc. for a program called "Party Line". These programs are similar to those of the Yukon Network.

In March LPRTs at Haines Junction, Y.T. and Cassiar, B.C. were joined to the Yukon Network which now serves the major part of the population of the Territory. On October 1st the Yukon Network "feed" from the CBC's national network was switched from the Prairie Region to the B.C. Region. This is more convenient for program scheduling because of the one hour difference between Vancouver and Whitehorse compared to the two hour difference between Edmonton and Whitehorse.

A third 50 kilowatt shortwave transmitter was added to the CBC's shortwave plant at Sackville in October. These transmitters operate currently on 6.12 megacycles (49.02 meters), 9.585 megacycles (31.30 meters), and 11.72 megacycles (25.60 meters). The additional transmitter made possible an increase in shortwave programming to the north from six hours 50 minutes to eight hours 30 minutes daily. The CBC is continuing its investigation of ways and means of improving shortwave service to the north.



During the past year political campaign talks during the federal general election were broadcast in the north for the first time as part of the CBC's program. The results on polling day were also covered. Local candidates were given broadcast time in those constituencies served by Northern Service stations on the same basis as candidates elsewhere in Canada. Special programs in local dialects were broadcast to explain electoral procedures to the large body of Eskimos who were voting for the first time.

Several program series specially designed for northerners were produced and broadcast by the Northern Service: THE COMMISSIONER REPLIES, in which the Commissioner of the Northwest Territories answered questions submitted by residents of the Territories; AS A MATTER OF FACT, a series of talks by eminent scientists on their work in the Canadian Arctic; ARCTIC WINDOW, produced in co-operation with the Arctic Institute of North America, a series of interviews with visitors from the north and discussions of books, films, etc. on the north. NORTHERN MESSENGER, which has been broadcast since 1932 and UQAUSI the Eskimo-language program initiated three years ago continued to be broadcast.

Radio coverage was given to the meetings of the Council of the Northwest Territories at Cape Dorset in July. The Director of the Northern Service and the Manager of Radio Station CFFB Frobisher Bay were present at the meetings. Reports on the sessions of the Yukon Territorial Council were carried by the Yukon Network.

A weekly series of talks by members of the Territorial Administration in Whitehorse were broadcast on the Yukon Network under the title TERRITORIAL AFFAIRS.

The 13th meeting of the Committee on Eskimo Affairs in Ottawa was covered by CBC both for the Northern Service and its other networks.

The Northern Service contributed many programs to the national radio network of the CBC. The Gold Rush Festival at Dawson City was extensively covered by CBC radio and television networks.

The Northern Service continued to recruit staff from the local communities of the North both on a permanent and part time basis. Two of the first four Eskimo graduates of the Sir John Franklin High School, Yellowknife, joined the Northern Service staff; one as a stenographer at CHAK Inuvik and the other as a stenographer at Head Office, Ottawa.

#### Plans for 1963

Application is being made to the Board of Broadcast Governors at their January 1963 meeting for authority to replace the existing 250 watt transmitter at Whitehorse with a new one of 1000 watt power and to change the broadcast frequency from 1240 kc/s to 570 kc/s. The new transmitter will increase signal strength in Whitehorse itself and extend coverage to additional settlements in the area.

It is planned to extend the present Yukon Network by the installation of low power relay transmitters at Teslin, Destruction Bay, and Beaver Creek. The completion of these projects will fulfil the Corporation's present plans for radio coverage of the Yukon Territory.

Uranium City will be connected to the Mackenzie Network early in 1963 with the completion of the microscatter circuit from Fort Smith.

The study of shortwave antenna and transmitter facilities at the Corporation's shortwave plant at Sackville, N.B., will be continued with a view to further improvement of the Northern Service shortwave transmissions.

CENTRAL MORTGAGE AND HOUSING CORPORATION.



Responsibilities      Design of housing, preparation of town development plans, and drafting of planning legislation as requested from time to time by the Department of Northern Affairs and National Resources. Financing of housing under the terms of the National Housing Act.

#### Long-term Plans

The facilities of the National Housing Act and the services of the Corporation will be made available as required.

#### Review of 1962 Operations

#### Lending Activities

Thirty-nine houses were financed under the National Housing Act, 28 units in the Yukon and 11 in the Northwest Territories. In the absence of loans from private lenders, all loans were obtained from Central Mortgage and Housing Corporation.

The average house built has 1,095 square feet of floor space and cost an estimated \$16,102, or \$14.70 per square foot. Average loans and down payments were \$13,923 and \$4,020 respectively.

Because of higher construction costs in the North, residents of these areas may obtain financial assistance for housing over and above that available under the National Housing Act. An additional loan of up to a maximum of \$2,000, secured by a second mortgage, is available to borrowers who have obtained an NHA loan. The funds are provided by the Territorial Governments, with Central Mortgage and Housing Corporation acting as agent in approving loans and in administering the second mortgages that secure these loans. The current interest rate for the latter is  $7\frac{1}{2}\%$  per annum, convertible semi-annually. The amortization term is the same as stated in the first mortgage and the total of the first and second mortgages may not exceed 95% of the value of the property as determined by the Corporation.

#### Other Activities

In May, a completed survey report and draft proposals for the Metropolitan Plan of Whitehorse were presented by the Corporation to the Deputy Minister of Northern Affairs and National Resources. Presentation to the Territorial and City Governments, to special groups and the Whitehorse public took place in July. The plan received a large measure of support and authority was given for preparation of final plans and the remainder of the report covering proposals and implementation. With the exception of the zoning by-law, these are now complete and ready for printing and final submission.

In September, work commenced for the Department of Northern Affairs and National Resources on official plans for Watson Lake and Haines

Junction in the southern Yukon. These followed earlier site visits and land-use surveys in both settlements. The plans, incorporating future zoning, sub-division design and proposals for planning administration in the north, have now been completed.

A site visit was made to Fort Simpson, N.W.T., in April to carry out a land-use survey and to hold general discussions in connection with a study of the area as a possible future capital of the proposed new Mackenzie Territory. The study was undertaken by Central Mortgage and Housing Corporation in collaboration with the Department of Northern Affairs and National Resources and private consulting engineers. The results were submitted to the Session of the Territorial Council at Cape Dorset in July and the recommendations accepted.

At the request of the Department of Northern Affairs and National Resources, a sketch plan was prepared for Pine Point and development proposals for Fort Smith were reviewed.

In collaboration with the Ontario Research Foundation, the Corporation continued its research work in connection with the development of a completely self-contained sewage disposal system. Specifically aimed at problems encountered in areas of permafrost and difficult terrain where water is scarce, this device repeatedly re-uses the effluent, thus eliminating all out-flow and the associated requirement of either disposal field or sewer connection. At R.C.A.F. Station, Rockcliffe, a working model of a unit continued to be tested during 1962. Recently, modifications were found necessary and trials are continuing.

In co-operation with the Department of Northern Affairs and National Resources, a larger type of recirculation sewage unit has been developed to handle six toilets at a school in Cape Dorset. The required equipment is now on site and will be installed early in 1963 with performance being observed and tested throughout the remainder of the year.

#### Plans for 1963

Work will be undertaken as required for the Department of Northern Affairs and National Resources or for other agencies of the government.

Lending activities will continue at a level determined by the demand for and the supply of mortgage funds.

DEPARTMENT OF CITIZENSHIP AND IMMIGRATION



INDIAN AFFAIRS BRANCH

### Responsibilities

The administration of the Indian Act, as amended.

Among its many important responsibilities is the social and economic development of the Indian population, the Indian Treaty obligations, the enfranchisement of Indians, and the administration of the estates of deceased or mentally incompetent Indians.

Preliminary tabulation indicates that on December 31, 1962, Indians in the Northwest Territories numbered 4,996 and in the Yukon 2,852.

### Long-term Plans

The majority of Indians in the North still depend for livelihood on the utilization of renewable resources. The Indian Affairs Branch will, therefore, continue to develop sound trapping and commercial fishing practices, in co-operation with the Department of Northern Affairs and National Resources and the Department of Fisheries, and will provide assistance and supervision for domestic fisheries.

In co-operation with the Department of Northern Affairs and National Resources, the employment programme will continue to focus on these major objectives: developing existing employment opportunities for Indians who are qualified, able, and willing to take advantage of them; searching out and developing new employment opportunities in a wider range of activities; training and preparing Indians to enable them to participate more fully in the development of the North.

In the field of education, the Indian Affairs Branch will continue to arrange for the gradual admission of all Indian children in the Yukon Territory to schools operated under the Yukon Territorial Government.

### Review of 1962 Operations

The resources utilization programme was continued with further progress in the re-organization of trapping and the quality improvement programme.

During the 1961-62 trapping season, 984 Indian trappers took out permits and harvested fur to the value of \$261,000, to which must be added an equivalent amount representing the value of game which was available to them on their trapping grounds, but which would not have been had they remained in the depleted areas surrounding the settlements. Some Indians were assisted by grubstake advances of which 80% were repaid from fur proceeds by the end of the season.

During the summer fishing season a commercial project was organized in the Fort Resolution area where five selected two-man crews were outfitted with yawl boats and other equipment. In a short

44-day season these crews took a total of 58,717 pounds of commercial fish with a value to them of \$6,501.94. This successful project indicates that local residents can and will take part in the onshore fishery in Great Slave Lake and that they are well equipped to take over, completely, the inland lake fisheries where compass or dead-reckoning navigation is not a consideration.

Indians, again with supervision by departmental staff and assistance in the form of necessary equipment, participated in the winter commercial fishery. A total of just over 100 Indians took part with earnings in excess of \$50,000.

Increased emphasis was placed on domestic fisheries in all areas as a means, not only of providing subsistence food and dog feed, but of improving fishing techniques and skills against the day when the commercial industry is extended to all waters in the Territory. A total of 861 Indians fished with nets for domestic use with the recorded production being 2,735,965 pounds, indicating that the the total annual utilization by Indians is in excess of 3,000,000 pounds.

A walk-in freezer was installed at Old Crow, Y.T., to provide storage for domestic meat and fish supplies. This brought the total of such installations in the North to 17, with a total capacity of more than 200,000 pounds.

A new sawmill was provided at Fort Norman and the small unit at that point transferred to Fort Franklin where its lesser capacity is adequate for the welfare housing program.

Wage employment opportunities were exploited in a number of fields including buildings, transportation and the operation of schools, hospitals, and hostels. In addition, works projects were undertaken under departmental supervision. These included a road cutting project near Yellowknife in which 101 Indians participated with total earnings of \$67,000. Another road-cutting project in the Yukon Territory (Watson Lake) employed 152 Indians. A further 170 Indians were engaged in clearing a right-of-way to the Pine Point Mine Development.

Indians, for the first time, were employed as guides by Great Bear Lodge with marked success. Sixteen were employed and their net earnings after all their expenses had been met were approximately \$6,500, or an average of \$50 per week. Other tourist operators who have had trouble with less experienced help are much interested in the Great Bear Lodge results.

Fifty-three houses were built in settlements in the Territories and twenty-eight houses in the Yukon. Sixty-eight houses were repaired in the Territories while thirty were repaired in the Yukon. This is a larger program than in the preceding year and reflects the increasing part played by Indians in the planning, construction, and financing of their houses.



With the full co-operation of Indian Affairs Branch and the Yukon Commissioner, adequate accommodation for all Indian school children of the Yukon was provided. The annual report of the Indian Affairs Branch for the fiscal year ended March 31, 1962, indicates that there were 161 pupils enrolled in the residential school and 291 were receiving their education in territorial schools. The rest were enrolled in either Indian or non-Indian schools outside the Yukon Territory. The two hostels operated by the Indians Affairs Branch at Whitehorse for Indian pupils attending the local territorial and separate schools provided for an increased number of children. During the year a further capital contribution was made to the Christ the King School.

A new staff residence and agency office were completed at Fort Simpson where an amount of approximately \$48,000 was provided to extend a water supply system to a new sub-division for Indians. This work was carried out by the Northern Canada Power Commission.

Late in the fall an expenditure of \$7,000 was authorized to permit work on improvement of sanitation facilities at Rae, where an earlier epidemic caused the death of several persons. The work undertaken by the Indian Affairs Branch included the construction of privies and the provision of sanitation facilities. The Branch assumed responsibility for transporting Indian delegates from various settlements to a sanitation workshop held at Yellowknife during the month of December under the supervision of the Indian and Northern Health Services.

Several meetings were attended by officers of the division to discuss the financial aspects of sewer and water projects being undertaken by the Department of Northern Affairs and National Resources in various settlements in the District of Mackenzie.

#### Plans for 1963

Plans include orderly expansion of the trapping assistance and grubstake programs. Domestic and commercial fishing activities will be assisted by the provision of scows at Forts Good Hope, Franklin, Norman, McPherson and at Arctic Red River. More yawls will be provided for use in the Great Slave Lake fishery and suitable smaller boats as required for the inland lakes. These are in addition to regular items such as nets, jiggers, twine, leads, and floats. As much as possible of supplies for commercial use will be on a repayable basis.

A tractor will be supplied to the Aklavik Agency to be used for hauling firewood and building logs, for improving Indian lots and for preparing subsistence gardens and repairing roads. It may have limited use for hauling freight. Two garden tractors will be supplied for the Yukon Agency and some money spent in breaking and fencing gardens in Indian villages.

A new sawmill is under consideration for use at Hay River provided it would not be in competition with privately produced lumber which may be available at competitive prices.

A vocational training conference is planned for the District of Mackenzie to determine ways and means of fitting Indians into the expanding economy.

An amount of \$120,000 has been approved for clearing roads in the Yukon and \$80,000 of this has been encumbered to the Indian Affairs Branch for participation by Indians.

Negotiations between the Branch and the Commissioner of the Yukon were commenced and it is hoped that a Joint School at Carmacks and a new Joint School in Whitehorse will be arranged for in 1963.

No major works are planned either in the Yukon Territory or the District of Mackenzie, although funds in the amount of \$30,900 have been included in the Estimates for 1963-64 for the District of Mackenzie to construct Agency cabins, garages, etc. at various staff locations and also to construct drainage ditches at such places as Fort Resolution, Fort Providence, Hay River and Kakiska Lake.

In the Yukon Territory, an amount of \$2,500 is included for the construction of access roads to new housing sites at Upper Laird Reserve and building lots on the Whitehorse Reserve.

IMMIGRATION BRANCH

### Responsibilities

Implementation and administration of the Immigration Act and Regulations in the North as elsewhere in Canada including admission of immigrants, non-immigrants, returning Canadians and returning residents and deportation of undesirables. In implementing the policy of the Government in respect of immigration, the Immigration Branch considers that it has an active part to play in promoting the development of the economy of the whole country including the North. This includes agriculture, natural resources, large scale industries, construction projects, small industries, businesses and services.

### Long-term Plan

Normal planning to meet responsibilities including a continuous assessment of the opportunities that are suitable for immigrants and will attract them to the northern part of Canada.

### Review of 1962 Operations

Thirty ports of entry operated in the far North. One was a full-time Immigration office, six were Customs offices and the remainder were maintained under an arrangement whereby officers in charge of R.C.M.P. detachments, heads of certain Canadian meteorological stations and commanding officers of certain R.C.A.F. stations have been designated as Immigration Officers in Charge and Special Inquiry Officers to administer the Immigration Act and Regulations. At these ports of entry, immigration examination was made of 88,210 persons; 42 were immigrants, 12,121 returning residents, 76,036 non-immigrants and 11 persons were refused admission.

One hundred seventy-six immigrants were placed in employment in the Yukon and Northwest Territories by Immigration officers. In the same period 6 immigrant businesses were reported as having been established in the Yukon. These enterprises provided employment for 20 workers, (owner-operators included) and represented a total purchase price of \$117,000 of which \$85,000 was paid down.

The Medical-Welfare Agreement between the Federal Government and the Northwest Territories, covering assistance to immigrants who become indigent through accident or illness during their first year's residence in Canada, was continued.

### Plans for 1963

Similar to 1962.



CROWN ASSETS DISPOSAL CORPORATION

- Responsibilities
- (i) Disposal of surplus Crown assets declared by government departments and agencies operating in the North.
  - (ii) Disposal of surplus U.S. Government-owned property located in Northern Canada, under the provisions of Canadian Note 140 dated August 28th, 1961, and United States of America Note 52 dated September 1st, 1961.

Long-term Plans

Normal planning to meet requirements.

Review of 1962 Operations

Three representatives carried out inspection and disposal of surpluses in the Yukon Territory and Baffin Island on a seasonal basis. Disposals without inspection were carried out in the remainder of the Northwest Territories.

Plans for 1963

Similar to 1962, with the disposal of surplus U.S. Government-owned property in Northern Canada continuing to be the major operation of the Corporation in the North.

DOMINION BUREAU OF STATISTICS

Responsibilities Procurement and analysis of statistics for the Northwest Territories and the Yukon Territory and their publication in the Bureau's regular reports.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1962 Operations

Census

The 1961 census operations in the North were completed by December 31, 1961, and no census operations were carried out there during 1962.

Law Enforcement

The statistics of cases heard by the Territorial Courts and Police Magistrates' Courts dealing with indictable and summary conviction offences and juvenile delinquency, appeals heard by the Courts of Appeal, the movement of guardroom prisoners, and the police statistics of the R.C.M.P. as reported to the Dominion Bureau of Statistics for the Yukon and Northwest Territories were published.

Health

The Annual Returns of Hospitals were distributed to the hospitals in the Northwest Territories through the Territorial Division of the Department of Northern Affairs and National Resources. The Yukon Territorial Government distributed and collected the Returns for the hospitals in the Yukon.

All public hospitals in the Northwest Territories (7 general and 1 tuberculosis) submit data regarding the movement of patients, personnel, facilities, bed capacities, and finances. The 15 federal nursing stations and 2 private hospitals submit the same data with the exception of finances. In the Yukon the 3 public general hospitals submit all data as listed above while the 2 federal hospitals report all data except finances.

Data from the tuberculosis hospital were presented in the annual report "Tuberculosis Statistics" while data from all other hospitals were published in the annual report "Hospital Statistics".

The Yukon Superintendent reported, on a four-weekly basis, all cases of notifiable diseases in his Territory. Weekly reports covering the incidence of venereal diseases in the Northwest Territories were received from the Alberta Department of Health and the Directorate of Indian and Northern Health Services of the Department of National Health and Welfare. These data were incorporated into the Dominion Bureau of Statistics' Annual Report of Notifiable Diseases; in addition, the venereal diseases data were included in the Dominion Bureau of Statistics' Notifiable Diseases Weekly Summary.



Hospitals in the Yukon and the Northwest Territories reported information on tubercular patients admitted, re-admitted and discharged during the year. Since January 1961, a new system of case notification from the provincial tuberculosis case Registers has been in operation in Canada. Also co-operating in the system are the Yukon and the Northwest Territories, but in the absence of a case Register, their tuberculosis notification cards are submitted monthly to the Dominion Bureau of Statistics by the Directorate of Indian and Northern Health Services of the Department of National Health and Welfare. Information from the case notification system formed part of the Dominion Bureau of Statistics' Monthly Reports, "Incidence of Tuberculosis".

### Vital Statistics

In September the final tabulations for the Yukon Hospital Insurance Service Morbidity Program 1961 were released to the Yukon H.I.S. and the Department of National Health and Welfare. A similar program is under way dealing with 1962 data. Because of a change in the administrative set-up of the Yukon Hospital Insurance Service a certain delay has been unavoidable in processing this information.

Vital Statistics for the Northwest Territories and Yukon were compiled from registrations of births, stillbirths, marriages, and deaths supplied by the Department of Northern Affairs and National Resources, and the Commissioner of the Yukon Territory, as had been the case for many years. Owing to local problems in these areas (distance, communications etc.) it was not possible, prior to 1956, to have complete returns sufficiently early, or tabulated in sufficient detail, to permit combining with provincial data for publication of national totals in the regular vital statistics reports, and consequently they were published as an appendix to the regular series. Vital statistics data for these areas are now being compiled in similar detail to, and published in the national totals on the same basis as, provincial data.

Tabulations of certain vital statistics for recent years were supplied to the Northwest Territories and the Yukon Administrations on request; arrangements are being made to supply these as a matter of routine.

Both the Yukon and N.W.T. administrations are separately represented in the Vital Statistics Council for Canada. This body, composed of provincial and territorial officers responsible for recording vital events meets annually to discuss legislative, registration and statistical matters.

### Education

Since 1955 reports on educational statistics of the same type as used in the Provinces have been collected from the public schools of the Yukon through the Superintendent of Schools at Whitehorse.

The same basic reports on teachers and enrolment have been adopted for the schools in the Territories and these have been collected annually by the Department of Northern Affairs and National Resources beginning with the school year 1959-60. These reports also include one on promotion and non-promotion of pupils similar to that used for the Indian schools but additional to the report forms used for the public schools of the provinces. Beginning with the school year 1960-61 the public school and the Roman Catholic separate school at Yellowknife reported in the same way as federal schools.

Preliminary figures on numbers of teachers and enrolment were collected early in the fall by the Education Division of Northern Administration for their own use and the Dominion Bureau of Statistics.

The Department of Northern Affairs and National Resources provided some information on expenditures on education including the finances of the Public School Board at Yellowknife. The Roman Catholic Separate School Board at Yellowknife reported finances directly to the Education Division.

Expenditures on education by the Territorial Governments of the Yukon and the Northwest Territories are extracted from territorial public accounts.

Statistics on Elementary and Secondary education in the Yukon and the Territories are now being shown in all publications of the Education Division relative to this field.

#### Foreign commodity trade and international travel movements

Annual statistics on foreign commodity trade through customs ports in the Yukon were published in total for both exports and imports, with monthly details available on request. Statistics on international travel movements through ports in the Yukon were published monthly. These international statistics were obtained through customs offices at ports in the Yukon Territory; data on commodity trade and automobile movements were recorded by the Department of National Revenue and compiled by the Dominion Bureau of Statistics, and other travel movements were reported by the Department of Citizenship and Immigration.

#### Industrial activity

The Industry and Merchandising Division regularly collects statistics for the Northwest Territories and the Yukon on the following activities:

1. Manufacturing
2. Mining
3. Logging
4. Fishing

for 1961 it also collected statistics on:

5. Retail Trade
6. Wholesale Trade
7. The Service Trades such as auto repairs, hotels, laundries, etc.

For all of the above the statistics will be published in as much detail as possible under the confidential clauses of the Statistics Act.

#### Food costs

During 1962 surveys of the comparative food costs of Federal Government employees were carried out at approximately 40 settlements in the Yukon and Northwest Territories. A survey of the domestic fuel and utility costs being incurred by such personnel was also conducted throughout the Canadian North.

#### Public finance

Statistics on actual revenue, expenditure and debt have been included in the Dominion Bureau of Statistics' annual reports on "financial statistics of provincial governments - actual" for a number of years. The data are obtained from the Public Accounts of the territorial governments, supplemented by information supplied by treasury officials.

Quarterly statements of the revenue and expenditure of the Northwest Territories government are received regularly from the Department of Northern Affairs and National Resources and are incorporated into the Dominion Bureau of Statistics' quarterly statements of government transactions related to the National Accounts.

#### Municipal

Actual financial data for the four incorporated municipalities in the territories are obtained directly from the municipal officials and are included in the Dominion Bureau of Statistics' annual reports on financial statistics of municipal governments.

#### Territorial taxes

Data on rates of the principal taxes levied by the territorial governments are included in the Dominion Bureau of Statistics' annual report "Principal Taxes and Rates".

#### Liquor

Data on liquor sales, by type, and on profits of the liquor boards, are obtained from the liquor board authorities in both territories for inclusion in the Dominion Bureau of Statistics' annual report "Control and Sale of Alcoholic Beverages in Canada".

### Transportation

Highway statistics for the Yukon Territory and the Northwest Territories were provided by the departments of National Defence, Northern Affairs and National Resources and the officials of the local municipalities. Also reported by governmental authorities were statistics of motor vehicle registrations, gasoline and diesel oil sales, traffic accidents involving vehicles, and revenues derived from licences and taxes arising out of the operation of motor vehicles. Freight and passenger statistics were supplied by common and contract motor carriers operating within and in and out of both the territories.

Statistics of railway operations in the Yukon Territory were provided by the White Pass and Yukon Route Railway.

Reports of civil aviation were regularly received from carriers located in, and those servicing, the Yukon Territory and Northwest Territories.

Water transportation reports were regularly submitted by companies operating cargo vessels on the Mackenzie River system. In addition vessels entering the ports of the Northwest Territories reported particulars of cargoes loaded and unloaded.

### Electric energy

Statistics of the generation and distribution of electric power in the territories were supplied by private firms and the Northern Canada Power Commission. Data of capability and load were obtained from the producers of power while statistics of meters were furnished by firms engaged in the distribution of power. Information on different types of prime movers and generators was collected for the year 1961 for both territories to be published in a new report.

### Communications

Telegraph and cable statistics for the Yukon Territory were obtained from the C.N. Telegraphs, Montreal. Telephone statistics were provided for both territories by the Yukon Telephone Syndicate Ltd., the Bell Telephone Co. of Canada and the Yellowknife Telephone Co.

### Pipelines

Oil pipeline statistics for the Yukon Territory have been reported by the Alaska-Yukon Pipelines Ltd. and the Yukon Pipelines Ltd.

### Dominion and territorial payrolls

Employment and payrolls of the Government of Canada and its Crown Corporations, for services carried out in the Yukon and Northwest Territories, were covered by reports submitted each month by the responsible departments and corporations and in some cases by means of official documents of the Civil Service Commission, the Treasury Board, and the Privy Council.



The government of the Yukon Territory and its Crown Corporations provide monthly statements of their employment and payrolls. The government of the Northwest Territories submits a quarterly statement on staff of the Liquor Commission. Departmental services of the Northwest Territories' government are performed by employees of the Government of Canada. These employees are reported in statistics for the federal government departments.

At present, no information is collected with regard to municipal government employment and payrolls in the Territories and it is not presently known when such a survey will be undertaken.

#### Other

Personal Income for the Yukon and the Northwest Territories is included in the National Accounts, Income and Expenditure. In 1961, it was \$46 million out of \$28,049 million, i.e., about one-fifth of one per cent of Canadian personal income.

Calculations of gross national product per capita for Canada were made for the certificates submitted to the Northwest Territories and Yukon respectively by the Dominion Statistician as required for the Taxation Agreements.

Net value of commodity production data was available up to 1960 from 1926 for the fishing, trapping, mining and electric power industries, from 1939 for manufacturing, and from 1940 for forestry (see Survey of Production report, Vol. 40).

Monthly data on employment, payrolls and man-hours were collected from a few industrial establishments in the areas engaged in mining, construction, transportation, storage and communication and catering, and a few in manufacturing. Statistics for these areas are not separately published, but are contained in the Canada figures in "Employment and Payrolls" and "Man-hours and Hourly Earnings".

#### Fur

Data were obtained on the numbers and values of pelts taken in the regions for the Fur Season 1961-62.

Northwest Territories - The number of pelts exported from the Northwest Territories and the prices paid to trappers was provided by the Deputy Commissioner of the Northwest Territories.

Yukon - The number of pelts exported was provided by the Commissioner of the Yukon.

Price per pelt data pertaining to the Yukon were obtained from:

- (1) Messrs. Taylor & Drury Limited, Whitehorse, Yukon.
- (2) Western Canadian Fur Auction Sales Ltd., Vancouver, B.C.
- (3) Seattle Fur Exchange, Washington, U.S.A.

### Plans for 1963

It is not expected that there will be any change in the Dominion Bureau of Statistics dealings with the hospitals in the Yukon and Northwest Territories in 1963. The only change that may be encountered is the disappearance of the last tuberculosis hospital which will probably become a general hospital. In that case all distribution and collection will be channelled through the Territorial governments thus eliminating any direct contacts with the hospitals.

The Yukon Hospital Insurance Service has requested that the Dominion Bureau of Statistics continue the Morbidity Program for the year 1963, following which it is expected that Yukon will be prepared to carry out its own statistical program.

The Industry and Merchandising Division of the Dominion Bureau of Statistics will only collect statistics for the Northwest Territories and the Yukon on Manufacturing, Mining, Logging and Fishing.

Analysis of the food and fuel cost surveys will be completed during 1963, and the results will be used to assist in reviewing the level of Isolation Allowances paid to Federal civil servants.

The Dominion Bureau of Statistics will include estimates and preliminary data, for the first time, in its next annual report entitled "Financial Statistics of Provincial Governments - Revenue and Expenditure - Summary of Estimates and Preliminary Analysis" to be published in the Summer of 1963, which will deal with the 1962-63 and 1963-64 fiscal years.

ELDORADO MINING AND REFINING LIMITED

Responsibilities Maintenance, on a caretaker basis, of a shut-down mining plant at Port Radium on the southeast shore of Great Bear Lake.

Long-term Plans

None.

Review of 1962 Operations

Maintenance was continued.

Plans for 1963

None.



DEPARTMENT OF EXTERNAL AFFAIRS

The Department of External Affairs has supplied the following statement on U.S. Government activities in Northern Canada which were current during 1962. Other U.S. activities which have been described in earlier reports and the status of which did not change during the year, are not included.

I Additions to the Haines-Fairbanks Pipeline

An Exchange of Notes was concluded on April 18, 1962, between Canada and the United States providing for the construction by the United States, at a cost of approximately \$2,750,000, of three additional pumping stations on the Yukon section of this pipeline. In all, six new pumping stations were constructed to increase the rate of flow of the pipeline. The three stations constructed in Alaska were, of course, not the subject of the Exchange of Notes.

DEPARTMENT OF FISHMOLES

CONSERVATION & DEVELOPMENT, AND INSPECTION SERVICES

Responsibilities      Conservation, protection and development of fisheries through enforcement of the Fisheries Act, Fish Inspection Act, and their regulations.

Long-term Plans

To encourage the development of commercial and domestic fisheries wherever conditions are suitable, having regard to markets, transportation, and other factors. To promote greater utilization of fishery products by inspection and assistance in the development of technological processes to obtain consistently high quality. To conserve and maintain the desirable fish populations by application of other conservation measures whenever necessary.

Review of 1962 Operations

The Department's establishment at Hay River continued to maintain its close control over the major fishery in Great Slave Lake. There was, in addition, great expansion of activity throughout the Territories in collaboration with the Department of Northern Affairs and National Resources in their efforts to expand sport and commercial fisheries. These efforts included, in addition to certain relatively small fisheries and marine mammal programmes, substantial fisheries at Frobisher Bay, the mouth of the Mackenzie River, and Cambridge Bay.

The patrol vessels "Marila" and "Mareca" carried out regulation enforcement in Great Slave Lake assisted by a small fleet of snowmobiles. Here and in other areas extensive use was made of chartered aircraft. The Department's technical personnel concentrated mainly on the problems of the Yukon Territory. The fish facilities in the Whitehorse dam continued to function efficiently. Certain proposed hydro and pollution problems were dealt with. Detailed surveys have been made on additional lakes by Departmental and Fisheries Research Board crews. The Department worked closely with United States agencies studying the possible effects on salmon populations of hydro development of the Yukon River.

A month prior to the new year, large lake areas were made available for quota commercial fishing. It is believed that potential is sufficient to attract operations, and industry has taken the initial steps to take advantage of this expansion, particularly in the Northwest Territories. Concurrent collection of scientific data is taking place and controls to protect the domestic and sports fishing supply are in effect.

Inspection continued to ensure that a high quality product reached the markets.

Plans for 1963

Continuation of the expansion programme will require close collaboration and liaison with scientists of the Fisheries Research Board and will entail increased activities of fishery officers in connection with protection of the resource, quota enforcement, and ensuring proper collection of statistical catch material and scientific data.



The biologists will concentrate mainly on the Yukon, where increased attention may have to be given to international problems arising out of plans for the lower river. Each project of the Department of Northern Affairs and National Resources involving fish and marine mammals will have to be examined and followed to ensure that the continuing supply is not endangered.

FISHERIES RESEARCH BOARD OF CANADA

### Responsibilities

Investigations of the marine, freshwater, and anadromous animal resources of the Canadian Arctic, involving biology and utilization. Study of biological oceanography in relation to these resources.

### Long-term Plans

To continue and expand fish and marine mammal studies, and to recommend wise exploitation of Arctic marine and freshwater resources.

### Review of 1962 Operations

The major highlight was a summer survey mainly of fishes and biological oceanography, and of marine mammals where practicable, in the Canadian arctic islands. The survey was carried out from bases at Cambridge Bay, Resolute, Eureka, Assistance Bay, Creswell Bay, and the mouth of the Thomsen River. Substantial collections of marine and freshwater fishes, bottom fauna, and plankton were acquired. Arctic char were encountered almost everywhere and samples of their parasites were taken. Of particular interest was the occurrence of lake trout, lake herring, and common whitefish in southern Victoria Island. No extensive sea fishing was carried out, but there were indications that arctic cod (Gadus ogac) and saffron cod (Uleginus gracilis) are readily available.

Studies centered on the arctic char and lake trout stocks of Ferguson Lake were continued. Lake trout formed from 40% of the catch in May to 90% of the catch in August.

Exploratory fishing from the M.V. "Salvelinus" was continued, gill netting being most frequently used. True herring (Clupea harengus pallasi) was the most abundant fish with sizeable stocks existing between Liverpool Bay and southeastern Darnley Bay. In Cape Parry harbour, jigging for arctic cod yielded approximately 100 lbs. per hour per man.

As part of a programme associated with the opening of lakes in the Northwest Territories to commercial fishing, a study was carried out in Keller Lake. These and other data should provide a sound basis for estimating the fishing potential of the lake.

Aerial photographic surveys for harp seals were carried out in the Gulf of St. Lawrence and east of Belle Isle. There is every indication of a continued decline in stocks at current hunting efforts.

Samples of white whales taken at Whale Cove have provided valuable information on their rate of reproduction and growth. The tabulation of data concerning the seasonal distribution of whales on the Atlantic coast was continued.

Analysis of zooplankton collections taken in eastern Beaufort Sea and Amundsen Gulf was completed. Asteroidea (sea-star) collections have been studied and the data incorporated into a monograph on the sea-stars of northern Canada.

Plans for 1962

Biological studies on Arctic char started in the Cambridge Bay region in 1961 will be continued.

A biological survey of Great Bear Lake will be made and studies in Great Slave Lake will continue.

A number of scientists will be participating in the 1963 ICNAF Environmental Survey of Greenland Waters.

Emphasis will be placed on analysing material obtained in 1962 and preparing reports and publications.

Continuing studies on harp seals and exploratory fishing by the M.V. "Salvelinus" will be carried out.

A field party will go to Pond Inlet in May to begin studies on narwhal and at the same time to work on walrus and Greenland shark and assess generally the fisheries potential of that area.

DEPARTMENT OF FOLKLORE



Responsibilities To prepare forest inventories and formulate forest management plans for lands administered by the Crown, and to give advice on forest fire protection.

#### Long-term Plans

To determine the potentialities of the forest resources of the north, and to assist in the preparation of plans for their protection and utilization.

#### Review of 1962 Operations

##### Administration Branch (Forest Management Section)

An inspection trip was made to Fort Smith, Northwest Territories, District of Mackenzie and Watson Lake, Yukon Territories.

##### Forest Entomology and Pathology Branch

Operations were directed mainly to the appraisal of infestations of the spruce budworm and larch sawfly in the southern part of the District of Mackenzie, and bark beetles and seed cone insects in the southern part of the Yukon.

In the District of Mackenzie this involved some 4,000 miles of travel by truck along the Mackenzie and Great Slave highways, 550 miles by boat along the Slave River and 20 hours of chartered flying along the Hay, Liard, and Mackenzie rivers and along the west shore of Great Slave Lake.

In the Yukon approximately 2,500 miles were travelled along the Alaska Highway, MacPherson Road and Dawson Road for the purpose of carrying out ground surveys. 4 hours of flying were done in helicopter provided by the Department of Northern Affairs and National Resources.

##### Forest Research Branch

A field party composed of one Research Officer and a student assistant spent one month in the vicinity of Hay River and Fort Providence in the District of Mackenzie, collecting material and ecological data for root studies of white spruce and botanical material for use in tree breeding research in jack pine. One Research Officer spent one week on a reconnaissance survey in the Wood Buffalo Park, and two Research Officers spent a week on a similar reconnaissance and ecological survey in the Watson Lake - Whitehorse area of the Yukon Territory.

#### Plans for 1963

##### Forest Entomology and Pathology Branch

There will be no appreciable increase in the travel programmes for these regions in 1963. Boat travel will probably increase to

about 1,500 miles for a survey along the Mackenzie System.

Forest Research Branch

One field party, consisting of a research officer and probably two students, will spend several weeks in the Fort Smith area studying regeneration of white spruce on cut-over lands. It is anticipated that control burning will be used to provide one of the seedbed treatments to be studied.

DEPARTMENT OF JUSTICE

### Responsibilities

The administration of justice in the Territories, including the organization and maintenance of territorial courts of civil and criminal jurisdiction; the appointment of judicial officers, Justices of the Peace, Magistrates, Juvenile Court judges, and related personnel; the direction and conduct of court proceedings on behalf of the Crown, including prosecutions under the Criminal Code and the Territorial Ordinances.

### Long-term Plans

To improve, develop, and organize the administration of justice in the Territories in such a manner that, at the appropriate time, it may be transferred to the Territorial working system. The "administration of justice" in this context includes the organization of the courts, the conduct of criminal and civil litigation on behalf of the Crown, and all related matters.

### Review of 1962 Operations

Criminal proceedings were conducted by Crown counsel, when necessary, before the respective superior courts, Justices of the Peace, and Police Magistrates, the last-mentioned also acting where appropriate as Juvenile Court judges.

Proceedings which were not held in the larger centres were dealt with by local Justices of the Peace or when appropriate by the Magistrates and Superior Court justices on circuit. The day-to-day administrative duties respecting the courts were carried out by the clerks of the court and sheriffs.

### Plans for 1963

To station a senior officer of the Department in the Yukon Territory, and possibly in the Northwest Territories.

DEPARTMENT OF LABOUR



### Responsibilities

Conciliation and other services for maintaining good industrial relations; administration of the fair wages policy, fair employment practices, annual vacations with pay, and female employees equal pay legislation; promotion and administration of the municipal winter works incentive programme; sale and administration of government annuities; compensation to government employees for occupational injury or illness; development, promotion, and co-ordination of technical and vocational training programmes; surveys of wage rates, hours of labour, and other working conditions.

### Long-term Plans

Normal planning to meet responsibilities.

### Review of 1962 Operations

### Industrial Relations

Two applications from trade unions for certification of bargaining agents for employees of companies in the Yukon and Northwest Territories were investigated. Three other applications were investigated which in fact affected employees of companies operating in the Territories. Two industrial disputes involving a company and trade union in the Yukon and a company and a union in the Northwest Territories were mediated. Several complaints concerning vacation with pay were processed.

Sixty-five "fair-wage" schedules in the Northwest Territories and 25 in the Yukon were established for federal government construction contracts, and 1410 recommendations were made for establishing wage rates for prevailing rates of employees of the federal government.

### Technical & Vocations Training

Officers of the Technical and Vocational Training Branch consulted with and advised officials of the Department of Northern Affairs and National Resources and the Yukon Territory about the development and operation of vocational training facilities in the north. The governments of both territories submitted capital projects for approval under the Technical and Vocational Training Agreement.

A new trade school, estimated to cost over \$750,000, was approved for Whitehorse. The federal government's share is about \$567,000. This school will be completed in the summer of 1963.

Vocational training facilities at the Sir John Franklin School at Yellowknife were expanded at a cost of approximately \$480,000 to be shared by the Northwest Territories and the federal government through the Department of Northern Affairs and National Resources and the Department of Labour. Almost \$65,000 will be contributed under the Technical and Vocational Training Agreement administered by the Technical and Vocational Training Branch.

### Government Employees Compensation

Claims of federal government employees, regularly working in the Yukon and Northwest Territories for compensation for occupational accidents or diseases were received, adjudicated, and paid by the Alberta Workmen's Compensation Board, under a federal-provincial agreement. A total of 659 claims was received and disbursements were \$90,642.

### Economics and Research

The Economics and Research Branch conducted two annual surveys - one on wage rates, salaries and hours of labour, the other on working conditions - covering 18 establishments in the Yukon Territory and 24 in the Northwest Territories. Not included in these figures is the Northern Canada Power Commission (Ottawa) whose return covers all localities served in both territories. The Branch also maintained a file of collective agreements covering employees in these areas.

### Annuities

No statistics are available on the number of government annuities sold in the North but it is believed to be small. Sales and other business relating to government annuities were carried out by correspondence.

### Municipal Winter Works

Two municipalities in the Yukon and ten in the Northwest Territories carried out projects under the Municipal Winter Works Incentive Programme. The estimated costs of these projects were \$11,120 and \$58,872 respectively, the estimated federal government share being \$2,115 in respect to projects in the Yukon and \$25,699 in respect to projects in the Northwest Territories.

### Plans for 1963

Normal operations, with some expansion in training activities.

DEPARTMENT OF MINES AND TECHNICAL SURVEYS

DOMINION OBSERVATORY

### Responsibilities

To extend to Northern Canada the same geophysical research and mapping techniques as are used in the South. This includes regional gravity surveys of the Northwest Territories including the Arctic Islands, the maintenance of seismic and magnetic surveys, and co-operation with the United Kingdom in the operation of a seismic array near Yellowknife.

### Long-term Plans

It is intended to continue the above mentioned activities indefinitely into the future. This will include the operation of seismography stations at Alert, Mould Bay, Resolute, Coppermine and Frobisher Bay. To extend geophysical studies in the northernmost islands and to supplement the network of seismography stations with additional stations including Whitehorse, Baker Lake, Hall Lake, Port Harrison, and Churchill.

### Review of 1962 Operations

Seismograph stations were operated at Alert, Mould Bay, and Resolute and additional stations were constructed at Coppermine and Frobisher Bay.

Magnetic observatories manned by one person each were maintained at Resolute, Baker Lake, Alert and Mould Bay, recording continuously the daily, seasonal and annual variations in the earth's magnetic field.

During August, a special survey was carried out by two observers to determine the present position of the North Magnetic Pole. Measurements taken at 6 temporary magnetic stations surrounding the Pole within 100 miles of it were combined with the continuous records from Resolute magnetic observatory to give an accurate and up-to-date picture of the configuration of the geomagnetic field in this interesting region. The last survey of this kind was made by the Dominion Observatory in 1948. In a joint operation of the Dominion Observatory and the Polar Continental Shelf Project, earth potential measurements were made at Alert, and 4 temporary magnetic variometer stations were occupied for several days at distances up to 100 miles southwest and northwest of Alert, in order to investigate the origin of a large anomaly of magnetic variations at Alert. As part of the Observatory's long range gravity mapping programme, which has the objective of measuring gravity at 8 - 10 miles intervals over the complete land mass and continental shelves of Canada, the Gravity Division carried out three major survey operations in Arctic Canada during the summer. One party made measurements at about 1,300 stations over an area of some 60,000 square miles of the western Queen Elizabeth Islands. The investigation covered all the Prince Patrick, Melville and Mackenzie King Islands as well as the sea ice of the inter-island channels and straits and a large area of The Continental Shelf out to a distance of 150 miles from shore.



Because of the importance of gravity surveys for delineating structures within the crust the results of this work are in great demand by the oil exploration industry who at present are actively exploring the petroleum possibilities of this large region.

Another survey party supported by two helicopters and one fixed wing aircraft established about 1,800 regional gravity stations over an area of some 140,000 square miles of Baffin Island in a 3 month operation starting in March. At the same time detailed gravity and seismic measurements were made over the Penny and Barnes glaciers in a cooperative study of these features with the Geographical Branch of the Department of Mines and Technical Surveys.

The third major gravity survey was carried out over an area of 30,000 square miles in the Coppermine area of the District of Mackenzie in a cooperative programme with the Geological Survey of Canada to study the Muskox intrusion; this programme forms part of Canada's contribution to the Upper Mantle Project, an international scientific study of the earth's interior.

In addition to these surveys, gravity measurements of a reconnaissance nature were made along a 400 mile east-west profile paralleling the northern coast of Ellesmere Island and Greenland.

#### Plans for 1963

Department of Transport personnel will begin operation of the seismograph stations at Coppermine and Frobisher Bay, and seismic vaults will be constructed at Yellowknife. The magnetic observatories at Resolute, Baker Lake, Alert and Mould Bay will be maintained. An airborne three-component magnetic survey covering the Queen Elizabeth Islands and all of the Arctic Ocean north of Canada is planned for November. Further field work is planned in the investigation of anomalies of magnetic variation at Alert and Mould Bay. The gravity survey will be extended and continued on Baffin Island.

GEOGRAPHICAL BRANCH

### Responsibilities

Obtaining data, through field investigation and compilation, on physical, economic, and social (including urban) geography. Preparing suitable maps and explanatory reports describing and interpreting these geographical factors. Assisting in other phases of planning and development through the provision of fundamental geographical data, including the investigation of questions of geographical nomenclature in the North.

### Long-term Plans

To complete preliminary reconnaissance terrain mapping by areas according to the National Topographic system, bearing in mind the constant need for certain more detailed investigations designed to solve problems vital to reconnaissance mapping or of particular significance to the economic development of the North.

To complete the mapping and interpretation of data on the distribution of ice in Canadian waters and glacial ice on land.

To complete land use surveys around northern settlements.

### Review of 1962 Operations

Field studies of terrain conditions and geomorphology were continued on Meighen and Baffin islands and inaugurated on Melville Island. Glaciological studies were continued on Meighen Island and greatly extended on Baffin Island, with investigations of the Penny and Barnes icecaps and several small glaciers. An airborne reconnaissance survey of sea ice conditions, initiated in 1961, was continued in the central Queen Elizabeth Islands. This work was carried out from bases at Isachsen and Resolute.

Investigation was completed for 298 new placenames and 221 contentious names in conjunction with 50 new maps and 73 general submissions. Some 1,300 previously approved names were reviewed for orthography and application.

Data were compiled on 31 settlements in Northwest Territories, Yukon and northern Quebec from field work carried out in previous years.

### Plans for 1963

With completion of the current phase of much of the work in the Queen Elizabeth Islands, concentration will be placed upon writing up results, so that only a skeleton glaciological programme will be undertaken on Meighen Island. The sea ice survey will be continued on the same scale as last year.

A total of eighteen geographers and assistants will further expand the field programme in north-central Baffin Island. Glaciological studies

on the Barnes Icecap will begin in April and will be extended to the Bruce Mountains in July and August. Geomorphological work will begin in late May and will be concentrated at the northwest margin of the Barnes Icecap and in the valleys of the Rowley and Pilik rivers to the north. The basis of the work will be extended during the pontoon-aircraft season in late July-August by further reconnaissance in the Bruce Mountains and the coastal section between Clyde River and Cape Adair.

The field study of settlements in the north will continue, as will the investigation and processing of geographical names, as and when the need arises.

GEOLOGICAL SURVEY OF CANADA



### Responsibilities

To prepare geological maps and reports describing bedrock and unconsolidated deposits; to investigate and assess mineral resources and the geological factors affecting their formation, discovery, and development; to provide fundamental geological data for engineering and water supply projects and other factors affecting land use; to make contributions to the science of geology.

### Long-term Plans

Highest priority is given to the task of completing the preliminary reconnaissance study and mapping of the north. When completed, this reconnaissance should go far towards meeting the immediate demands of the mining and petroleum industries for geological data on remote areas. It will permit preliminary estimates of the mineral potentialities, and should provide urgently needed data for future geological and other developmental work.

Large, helicopter-supported, field parties have successfully conducted extensive, rapid, good quality, and economical reconnaissance geological surveys in the barren grounds of the mainland Canadian Shield, in the Arctic Islands, and in the upper Mackenzie River Basin. They have also proved effective in mapping mountainous parts of the Yukon. Specially equipped Piper Super Cub aircraft have successfully aided geological operations under special terrain conditions in the Queen Elizabeth and other islands of the Archipelago. Full use of such techniques will be made to ensure the completion of the geological reconnaissance of most of the Yukon and Northwest Territories within about a decade.

This reconnaissance effort will continue to be supported and supplemented by more detailed studies needed to solve critical geological problems, especially those required to maintain the quality of the reconnaissance or aid in the understanding of mineral occurrences. These types of studies will receive progressively greater emphasis as the reconnaissance approaches completion.

Aeromagnetic surveys as made by, or for, the Geological Survey are primarily a supplementary method of obtaining reconnaissance geological data. As a result of an \$18 million co-operative programme of aeromagnetic surveying started in 1961, it is expected that an aeromagnetic survey of the Canadian Shield in Northwest Territories, and currently amenable parts of the Yukon, will be completed within 12 years. The surveys will be made by contracts with commercial survey companies. It is hoped that experimental surveys now under way in British Columbia will develop practicable and reasonably economic ways of making aeromagnetic surveys of mountainous terrain and thus make additional areas of Yukon and perhaps of the eastern and northeastern Shield amenable to these surveys.

### Yukon and Mackenzie River Basin

The field phase of the reconnaissance survey of Yukon and adjacent parts of District of Mackenzie north of the 65th parallel was completed by Operation Porcupine in 1962. A similar project will be mounted several years hence to complete the reconnaissance mapping of the sedimentary rocks of northwestern District of Mackenzie. The other principal unmapped areas are in extreme southeast Yukon, and adjacent parts of District of Mackenzie lying immediately west of the areas mapped by Operation Mackenzie in 1957. The reconnaissance of the unmapped areas will start in 1963 and, with the aid of helicopters, should be completed within the present decade. The need for detailed studies in producing and potential mineral areas is becoming increasingly urgent and it is hoped that a substantial increase in this type of work in the Yukon will be possible during the next few years without prolonging unduly the completion of initial reconnaissance.

### Districts of Mackenzie and Keewatin

The reconnaissance of the mainland Canadian Shield in the districts of Mackenzie and Keewatin has been completed with the exception of the extreme northeast part of the District of Keewatin, scheduled for completion by Operation Waver in 1964. Detailed studies to elucidate critical geological problems and to provide more adequate information concerning potential mineral areas have been increased in number, and this trend will continue.

### District of Franklin

The 8-mile geological investigation of the District of Franklin north and west of Baffin Island was almost completed by the end of the 1962 field season. A helicopter-supported reconnaissance of the northwest part of Baffin Island is planned for 1963, and three other such projects will follow with the object of completing the initial survey of the island, and of the District of Franklin, within the decade or shortly thereafter. Also scheduled to start in 1963 is the follow-up to the initial 8-mile reconnaissance, the 4-mile and more detailed mapping and study of Cornwallis, Bathurst, and adjacent islands; and this work will be extended in subsequent years by similar investigations of other critical areas and by stratigraphic-palaeontological studies required to solve specific problems. Aeromagnetic surveys, and studies of the marine geology of the northwestern continental shelf and adjacent channels, will keep pace with the Polar Continental Shelf Project as the centre of that effort moves southwesterly from Isachsen. It is unlikely that general level of Geological Survey activity in the Arctic Islands, except Baffin Island, will increase significantly in the next few years.

### Review of 1962 Operations

Seventeen parties spent the entire field season in Yukon and Northwest Territories, and four others part of the season.

In the District of Franklin, Operation Prince of Wales successfully completed the reconnaissance of the bedrock and surficial geology of Boothia Peninsula, and King William, Somerset, and Prince of Wales islands. Two parties studied the geology of the continental shelf and adjacent channels while attached to the Polar Continental Shelf Project at Isachsen. Another party completed a two-year programme of reconnaissance mapping of Axel Heiberg and northwest Ellesmere Islands started in 1961.

An aeromagnetic survey of some 33,000 line-miles was made from the Polar Continental Shelf Project base at Isachsen. The survey was made by contract with commercial operators. It included Mackenzie King and Borden islands, and parts of the continental shelf to the north of these islands, and Prince Adolf Gustaf Sea to the southeast. Flight-line spacing ranged from 1.5 to 3 miles.

In the southeast District of Keewatin one party commenced a re-study, for publication at a scale of 1 inch to 4 miles, of a complex and critical area outlined by Operation Keewatin in 1952; and another commenced sedimentation studies in the Churchill River estuary and adjacent part of Hudson Bay.

Projects in the District of Mackenzie included a study of the geochemistry and petrography of greenstones near Yellowknife; geophysical and geological surveys of the Muskox Intrusion, Coppermine River, to aid in the selection of sites for two holes to be drilled in 1963 as part of the International Upper Mantle Project; Operation Bathurst Inlet, involving the mapping of the bedrock and surficial geology of some 55,000 square miles adjacent to Bathurst Inlet; 1-mile mapping in two areas of the Yellowknife district, one containing lead-zinc deposits; 4-mile mapping of a critical area revealed by Operation Thelon in 1955; a Ph.D. thesis study of a granitic body; collection of Upper Devonian carbonate rocks near Hay River for a stratigraphic-petrologic Ph.D. thesis project; and the examination and sampling of diabase dykes as part of a comprehensive study of these rocks throughout the Canadian Shield.

A continuing scientific officer was assigned to the office of the Resident Geologist, Yellowknife. This enabled that office to fulfil its functions more adequately, including provision of geological services required in connection with the Prospectors' Assistance Programme of the Department of Northern Affairs and National Resources.

An aeromagnetic survey involving some 62,000 line-miles of flying was made from Yellowknife of parts of NIS map-areas 85 and 86. The work was done by commercial operators as the first phase of a three-year contract.

The major project in the Yukon and the District of Mackenzie was Operation Porcupine which completed the reconnaissance mapping of the bedrock and surficial geology of some 80,000 square miles north

of the 65th parallel and west of the 132nd meridian. A study, for a Ph.D. thesis, was made of the stratigraphy, structure, and other factors bearing on the localization of metallic minerals at and near the Canada Tungsten mine. Engineering geology studies, on behalf of the Department of Northern Affairs and National Resources, were made at two potential dam sites in the Yukon River drainage basin and thirteen in the Mackenzie River drainage basin.

In the Yukon Territory, one party completed sampling the heavy minerals of the gravels and soils in the Klondike district as possible guides to undiscovered mineralized areas; and two others investigated the geology of tin and copper deposits as part of their studies of these deposits in various parts of Canada. A scientific officer was recruited to the staff of the Resident Geologist, Whitehorse. New projects undertaken from that office included an airborne reconnaissance of various map-areas in southeast Yukon in preparation for future mapping, and geological aid to the Prospectors' Assistance Programme.

#### Plans for 1963

Some 17 field projects are planned for the Yukon and Northwest Territories.

The principal project in the District of Franklin will be Operation Admiralty, a helicopter-supported survey of the bedrock and surficial geology of that part of Baffin Island lying north of the 70th parallel and west of the 76th meridian. Two other parties, each supported by a Piper Super Cub aircraft, will commence a re-study of Cornwallis Island and Bathurst Island in considerable more detail than was done by Operation Franklin or previous geological surveys. Three parties will be attached to the Polar Continental Shelf Project to study the geology of the continental shelf and adjacent channels.

In the southeastern District of Keewatin the investigation of a critical area disclosed by Operation Keewatin in 1952 will be completed in detail appropriate to publication at 1 inch to 4 miles.

A project in the eastern District of Mackenzie and the central District of Keewatin will involve a study of the extensive volcanic and sedimentary rocks of the Proterozoic Dubawnt Group, outlined and described in a general way by Operations Keewatin, Baker, and Thelon, 1952 to 1955.

The principal project in the District of Mackenzie will involve the drilling of two 5,000 foot holes in the Muskox Intrusion on the Coppermine River as part of the International Upper Mantle Project, and the purchase and air freight of the very substantial amounts of fuel required for this work. Other parties will continue from



1962 the elucidation of geological problems arising from Operation Thelon, 1955; detailed mapping required to refine the interpretation of the geology between Great Slave and Great Bear lakes; detailed mapping of an area containing lead-zinc deposits on the north shore of the east arm of Great Slave Lake; and field work required to provide data for a Ph.D. thesis concerning the Devonian stratigraphy and petrology of Devonian carbonate rocks in the Hay River district. The Resident Geologist at Yellowknife will complete his tour of duty there, and be replaced by another staff geologist from Ottawa.

An aeromagnetic survey of some 60,000 line-miles between Fort Reliance and the north end of Contwoyto Lake (parts of NTS areas 75 and 76) will be made by contract with commercial operators. This work will be the second phase of a three-year flying contract started in 1962.

In southeast Yukon and southwest District of Mackenzie a helicopter-supported party is expected to map some 18,000 square miles between the headwaters of Flat River and Redstone River, a region being actively explored for copper, silver, tungsten, and other mineral deposits. The Ph.D. thesis study of the Palaeozoic stratigraphy, structure, and other factors responsible for the localization of ore at and in the vicinity of Canada Tungsten Mine will be completed. The engineering geology of dam sites in the Yukon and the District of Mackenzie will be continued as required by the Department of Northern Affairs and National Resources.

Surficial geology studies will be continued in the Klondike district of the Yukon. This work is a phase of Project Klondike, an investigation started in 1960 in an effort to prolong the life of the placer mining industry by providing more precise data concerning the sources and reasons for localization of the placer gold.

MINES BRANCH



### Responsibilities

Technical assistance for the development of mining and metallurgical industries in the North and for the development and utilization of petroleum and natural gas resources. Consulting advice and investigations on metals, metallic and non-metallic minerals, fuels, petroleum, natural gas, and industrial waters as related to northern development.

### Long-term Plans

To continue technical assistance in developing mineral, petroleum and natural gas resources and in co-operating with industry, the Department of Northern Affairs and National Resources, and other branches of Government.

### Review of 1962 Operations

#### Metallic Ores

Small scale investigations continued on a tungsten (scheelite) ore from Canada Tungsten Mining Corporation Limited, Flat River. This was followed by a pilot plant investigation on thirty-five tons of this ore to develop a full-scale flowsheet. As a result a three hundred ton per day mill has been designed and erected and is now in production. Small scale tests were carried out on a gold concentrate (Negus) on behalf of Precambrian Mining Services. A third investigation is in progress on an iron ore (hematite) from the Snake River area for Crest Exploration Limited (California Standard).

#### None-Metallic Minerals

A number of specimens received from properties in the Yukon were examined during the year.

#### Industrial Waters

A five-year programme of sampling and analysis of the Mackenzie and Yukon rivers was continued for the third year. Samples of surface and ground waters were analysed for the Geological Survey of Canada. Technical assistance was given to the Department of National Defence and other departments on problems in water treatment in Northern Canada. A report is being prepared on the chemical quality of waters (apart from drainage basins) in the Arctic Islands and the Northwest Territories.

#### Mine Air

Four analyses were made for the Elsa Mine, Elsa, and one for the Consolidated Discovery Mine, Yellowknife.

### Mineralogical Studies

Mineralogical reports were issued on a copper-nickel occurrence in the Rankin Inlet area and also on an iron ore from the Snake River area (Crest Exploration).

### Chemical Analyses

The Geological Survey of Canada submitted one hundred and seventy samples from the Yukon and Northwest Territories. These represented six hundred determinations, chiefly for precious and base metals. Nine reports were issued on this work with two others pending.

### The Use of Alloys at Low Temperatures

Investigations continued on the welding of constructional steels at temperatures down to -50°F. There was special emphasis on difficulties such as delayed cracking and the possibility of specifying techniques that will overcome these difficulties. An interpretive report (sponsored by the U.S. Welding Research Council) on the subject of welding at low temperatures was completed; this summarized major experiences reported in the literature and should be a major contribution towards the elimination of unnecessary precautionary measures that would delay progress in construction.

Light strongmagnesium alloy snowshoes were examined, and advice was given on certain design features and manufacturing operations. While these snowshoes are primarily designed for military use, they could have much wider application in the north because of their great durability.

Examination of steel propeller stub-blades after Arctic icebreaking service is in progress to determine the cause of premature failure of two blades and of unusual corrosion in another set of blades. In the meantime changes in blade design, casting technology, and heat treatment were being adopted by the propeller suppliers.

Data were collected for evaluating propeller materials with respect to cost, manufacture, and service. The principal requirement is for increased impact strength at 0° (32°F.) without sacrifice of the material's ability to resist deformation. This work is intended to assist in the development of improved manufacturing procedures and materials for icebreaker propellers.

### Plans for 1963

Technical and scientific services will be provided for assisting in the opening of new mines, for increasing mineral production in the Territories, and for solving production problems of petroleum and natural gas. Scientific advice will be available and investigations will be undertaken as required on northern problems related to metals, minerals, fuels, petroleum, natural gas, and industrial waters. Specific projects include the continuation of the long range sampling programme on the quality of waters in northern rivers.

POLAR CONTINENTAL SHELF PROJECT

### Responsibilities

To carry out a long-term investigation of the continental shelf lying to the north and west of the Canadian Arctic Archipelago and of the waters above it, together with the islands of the archipelago where relevant, and the straits and sounds between the islands.

### Long-term Plans

The field survey and research phases of the project will eventually cover all the Canadian sector of the arctic continental shelf of North America and all parts of the Arctic Archipelago not investigated by other agencies in this field. From 1959 to 1962 work has been concentrated in the region between Meighen Island and Brock Island, extending about 200 kilometres out to sea and the same distance back into the archipelago; but individual programmes of survey and research have been carried out throughout all the Queen Elizabeth Islands, and extended to Banks Island in the southwest and northern Greenland in the northeast. In 1963, the area of intensive work will be centred on the region about Brock Island and lying offshore from it, with a second area of activity in the Hell Gate district between Devon and Ellesmere Islands; work is also planned in Melville and surrounding islands, in M'Clure Strait, and in north-central Ellesmere Island. Additional work will be done as required in other areas. It is expected that the main area of systematic research and survey will be shifted along the Arctic Ocean front about 150 kilometres each year, with the moves being to the southwest for the next few years.

### Review of 1962 Operations

Field work was co-ordinated from Isachsen, on Ellef Ringnes Island. A party totalling 92 persons investigated the central section of the arctic continental shelf and adjacent islands and straits. The following is a summary of the work done in the major scientific fields:

#### Hydrography

The project continued with the bathymetric mapping, on a scale of 1:500,000, of the ice-covered waters of the Arctic Archipelago and the adjacent Arctic Ocean. Approximately 110,000 square kilometres have been sounded to date on this scale, with soundings approximately 8 kilometres apart, covering Peary Channel, part of Sverdrup Channel and Vincent Massey Sound, Hassel Sound, Hendriksen Strait, Danish Strait, Maclean Strait, the Prince Gustaf Adolf Sea, Byam Martin Channel, parts of Wilkins Strait and Hazen Strait, and the Arctic Ocean offshore from the region between Meighen Island and Brock Island, seaward to the outer edge of the continental shelf. This reconnaissance sounding has been controlled by the Decca Lambda position-finding network.

The greater part of hydrographic survey effort was devoted to the sounding of Penny Strait, between Devon, Bathurst, and Cornwallis Islands, on a scale 1:100,000. Using two Bell helicopters

(augmented late in the season by a Sikorsky S-55), controlled by a Decca Hi-Fix survey system, approximately 3,300 square kilometres were surveyed, with sounding at 2 Km. intervals.

The technique of obtaining echo soundings through Arctic pack ice has been developed to a high degree of efficiency, and good echoes have been obtained from depths of as much as 2000 metres (the limits of range of the recording equipment) through ice up to 4 metres thick. In routine operation, it may take as little as three minutes to obtain a deep-water sounding, from the time the helicopter touches down until it is off again. The main difficulties in sounding with this technique have been encountered late in the season; when the ice becomes water-soaked, it is difficult to transmit a sharp pulse of energy from the instrument through the ice to the water.

The first successful Arctic field trials were carried out with the helicopter-towed continuous recording echo-sounder. Approximately 120 kilometres of profile were run in ice-free portions of Penny Strait in the latter part of the season. Both Bell and Sikorsky helicopters were used. The results have been quite satisfactory, and it is expected that further research and modification during the 1962-63 winter will lead to a hydrographic sounding method that will allow accurate, continuous bathymetric profiles to be made wherever open water appears. This technique may be applied in any waters where it is difficult or dangerous to sound from a boat.

### Submarine Geology

The programme in submarine geology has been designed to provide information on the character and stratigraphy of the sediments on the floor of the seas surrounding the islands of the archipelago, and covering the continental shelf. Three main studies were carried out. (1) A series of cores and grab samples of the ocean floor were taken across the continental shelf northwest from Borden Island. These are being studied to determine the conditions of sedimentation and bottom transport on the shelf, and the relation of the sediments to the present coast line and to presently exposed geological formations. (2) A number of traverses were made across Gustaf Adolf Sea and Maclean Strait, with samples of bottom materials taken at intervals. Complementary traverses were made up the rivers on western Ellef Ringnes Island that deliver sediments to these channels, and from study of the collected material it may be possible to interpret the processes of sediment erosion and transport, sedimentation and diagenesis in an Arctic marine environment. (3) Palaeontological studies of the inshore sediments were made along the east side of Prince Gustaf Adolf Sea, with a view to dating the materials by means of their fossil content and investigating the past and recent marine biological environment.

### Seismic Surveys

The geological formations and the earth's crust beneath the Queen Elizabeth Islands were investigated by reflection and refraction seismic profiles. Early in the season, the structure of the north-



western part of the Sverdrup basin was investigated between Wilkins Strait (south of Borden Island) and Isachsen. The main part of the season was devoted to a traverse across the flank of the Boothia arch and the southern edge of the Innuitian folded belt. A party travelling by tracked truck, motor toboggan, and dog team moved from Barrow Strait up Wellington Channel, across Grinnell Peninsula, and down Arthur Fiord to the south edge of Belcher Channel setting off explosions at frequent intervals, which were recorded at a station on southeast Cornwallis Island. The resulting information tells much of the structure of the sedimentary and basement rocks, and gives the first indication of the depth to the Mohorovicic discontinuity and the thickness of the earth's crust in the area.

### Gravity Investigations

The gravity control network was extended with "base loops" linking stations 80 to 150 miles apart, covering Melville, Devon, Ellesmere, and Axel Heiberg Islands. The control network is now complete over all of the Queen Elizabeth Islands, except for part of eastern Devon and northwestern Ellesmere islands. The regional gravity survey, with stations on a grid network on about 12 kilometre intervals, was continued over the continental shelf north of Borden Island, in northwestern Prince Gustaf Adolf Sea, and over Mackenzie King, Brock, Prince Patrick, Eglinton, and Melville islands and the intervening straits. Except for an area in Hazen Strait and Byam Martin Channel, the regional gravity survey is now complete in the western Queen Elizabeth Islands.

Additional gravity surveys were made along a line across the north coast of Ellesmere Island and Robeson Channel, from Disraeli Bay on Ellesmere Island to the Newman Bay district of northwest Greenland. A second profile was made from Lake Hazen southeast across Archer Fiord and Kennedy Channel to Greenland.

### Geomagnetism

An investigation was made of a magnetic anomaly in the northeast Ellesmere-Robeson Channel area, with multiple magnetic stations established on a line through Alert and running northwest to near Cape Aldrich and southwest into Greenland.

A number of oriented samples for palaeomagnetic studies were collected from the Isachsen area. A programme of audio frequency magnetic measurements was started at Isachsen, but deferred because of failure of the equipment.

### Aeromagnetic Surveys

Approximately 50,000 line kilometres of aerial magnetic survey were flown. About half of the area surveyed lies within the archipelago, in the region of Gustaf Adolf Sea, Hazen Strait, Mackenzie King and Borden Islands; and the remainder lies over the continental shelf and continental slope north from Prince Gustaf



Adolf Sea and Borden Island. Flight line spacing varied from 1 to 15 kilometres. The information gained gives an indication of the depth to the crystalline basement rocks, and the distribution of igneous rocks, gypsum bodies, and other masses with distinctive magnetic properties.

### Physiography

An investigation of the land forms and physiographic history of Melville Island was begun. Particular attention was paid to shoreline changes, terraces, the development and preservation of beach ridges and deltas, and the truncation of valleys. Preliminary analysis of the results does not bring forth evidence of simple systematic changes of sea level in the Melville Island area.

Observations were also made in the region of the small ice-caps on Melville Island, and on the ice-free portions of Meighen Island.

### Glaciology

The glaciological research station on the ice-cap of Meighen Island was occupied for the fourth consecutive season. Measurements were made of accumulation and ablation, mass wastage, ice movement, temperatures at depth, and other parameters which serve to determine the response of the glacier to its climatic environment. Observations of the meteorological and micro-meteorological conditions on and surrounding the ice-cap have been continued and a physiographic study made of the ice-free portions of the island. The results of this work, combined with the seismic, magnetic, and botanical studies in the area, will give a picture of the recent history of the ice-cap and thus an indication of the climatic history of this part of Canada.

Ground control was laid out for special aerial photography of the northern and eastern ice-caps on Melville Island. The photography was carried out in early July, after the snow had disappeared but before extensive summer melting had begun. This photography, which shows the changes in ice cover since earlier pictures taken in 1950, will be used for compilation of a detailed map of the glaciers. A long-term series of investigations is planned for these ice-caps, which are the westernmost and apparently "driest" bodies of perennial ice in the Canadian Arctic Islands.

### Sea Ice Studies

Systematic patrols were made of all major waters of the Queen Elizabeth Islands and of the adjacent Arctic Ocean, and Parry Channel, throughout the season of significant sea ice activity. Information was recorded on the nature, break-up, amount, distribution, dispersal, and formation of the ice; and this was supplemented by an extensive photographic record. It has been possible to follow the movement of the same ice throughout the year and from season to season. Judging from the available past

records, 1962 was an unusual year from the standpoint of summer weather and ice movements; a great deal of ice that had lain in the north-central part of the Queen Elizabeth Islands for several seasons was swept southward and westward through the Archipelago; in other areas ice melting and dispersal was more extensive than had previously been recorded.

A series of ice thickness measurements was made early in the season in Penny Strait, to aid studies of this region that has open water throughout much of the year, and a characteristically early break-up.

A radar reflector target was placed on one of the largest of a series of "ice islands" or pieces of shelf ice, that broke from the Ellesmere and Ward Hunt Ice Shelf in 1962. It is hoped that future aerial patrols may be able to locate this target, and thus follow the course of the now fully drifting "ice island".

#### Topographical control surveys

A survey was run from the previously established base line along the Arctic Ocean front, to link the site of the Decca Lambda transmitter station on Cape Andreasen, northern Prince Patrick Island, to the regional geodetic and topographic network and to provide information for the calibration of the Brock Island Decca chain. A line was run from northwestern to southcentral Melville Island, to provide ground control for the air photography of the ice-caps on that island and to link them with the Army Survey Establishment perimeter topographic control network. The local ground control network for the Decca Hi-Fix survey system in Penny Strait was checked and in part re-run. The ground control was established in Hell Gate and Cardigan Strait for the Decca Hi-Fix network planned for that area the following season. Further surveys were made on Meighen Island, where the evidence for flowage of the ice-cap is still inconclusive.

A trilateration survey network was run up Wellington Channel and Arthur Fiord in connection with the seismic studies (q.v.), in order to give precise distances between the shot point in the water and the recording station on southeastern Cornwallis Island.

#### Archaeological and Historical Observations

Two pre-historic Eskimo camping or dwelling places were encountered on Melville Island in the course of the physiographic investigations, and they appear to be sufficiently rich in evidences of their former occupants to warrant serious and more complete investigations.

A number of cairns and campsites of former explorers were located and identified.

### Plans for 1963

Work will be continued in the major activities engaged in in 1962, except for aeromagnetic surveys and physiographic investigations.

Hydrographic surveys will be confined to the sounding of Hell Gate on a scale of 1:40,000, with such work as time permits in nearby Cardigan Strait. The development of the helicopter-towed continuously recording echo sounder will be continued.

The submarine geological parties will continue the three-fold programme of sampling the continental shelf, the channels and rivers, and palaeontological investigations.

The seismic traverse across the Queen Elizabeth Islands will be continued. From the south side of Belcher Channel the party intends to strike northwestward toward Borden Island, crossing the end of the Boothia-Cornwallis-Grinnell disturbance and the southern belt of Innuitian folding, and traversing the central part of the Sverdrup Basin. It is hoped to obtain both shallower geological and deeper crustal information in the course of the traverse. No fixed destination is set as a goal in any one season; the progress of the party will be controlled by the geophysical results obtained along the way.

Gravity investigations will concentrate first on a profile or profiles from the outer edge of the continental shelf over the continental slope as far as is logistically feasible. Further regional investigations will be carried out on Melville Island and nearby waters, in the region of north Devon and southern Ellesmere islands, and around Tanquary Fiord in west-central Ellesmere Island. Another series of gravity studies will be made in connection with the geomagnetic studies on northeastern Ellesmere Island.

Geomagnetic investigations will be directed toward further study of the anomalous area in northeast Ellesmere Island, and preliminary studies of a different magnetic peculiarity in the Prince Patrick-Melville island area. Absolute magnetic measurements will be made at a number of sites throughout the Queen Elizabeth Islands.

A series of accurately surveyed stations will be established on a large floating iceberg, or "ice island". The stations will be re-surveyed periodically, over as long a span of time as possible, to provide, by their relative movement or lack of it one to another, information on the flowage of a large mass of crystalline material resting on an essentially frictionless base. Other aspects of the glaciological work planned include the establishment of movement stakes and further ground control surveys for the Melville Island ice-caps, a re-survey of the Meighen Island ice-cap, and the drilling of a deep hole in the Meighen ice-cap to obtain cores from depth and temperature measurements. It is also hoped to photograph the active parts of a large number of the glaciers in the Queen Elizabeth Islands, as part of the five yearly world inventory of glaciers proposed by the International Association of Scientific Hydrology.

The sea ice patrols will be carried out unchanged, except to add certain reconnaissance observations over the Arctic Ocean and other waters as circumstances permit.

The appropriate topographical surveys will be carried out to provide basic position control or maps for the respective studies.

Co-operative studies with other agencies that are proposed include an investigation of sub-ice acoustics, of aerial sensing of pack ice, and archaeological and biological investigations.

Field work is expected to employ about 80 men, including personnel under contract but not counting crews of transient aircraft and others who may visit the field for short periods. Aerial transport within the field area is expected to include three Otters in the early part of the year and two thereafter, a twin-engined Beechcraft, two Sikorsky S-55 helicopters and two Bell 47G2A helicopters. Ground transport includes a Nodwell RN75 general purpose track truck, two Nodwell modified RN21B amphibious seismic traverse vehicles, a Bombardier J5 tractor, a Bombardier BB amphibious carrier, a Canadair C70 RAT, six Eliason K12, and five Autoboggan K95 and modified K95E motor toboggans. The work is now so wide-ranging that the project cannot be said to have a single base; the central communications facilities and workshops, which have been at Isachsen, will be moved to Mould Bay during the course of the summer. In addition to working from these two centres, aircraft and field parties will operate for varying periods of time from established or semi-permanent facilities at Resolute, Hell Gate, Winter Harbour, Cape Andreasen, Brock Island, Borden Island, Meighen Island, Tanquary Fiord, Lake Hazen, and Alert, from an ocean camp about 200 kilometres northwest from Brock Island, and from a number of intermediate camps and depots.

SURVEYS AND MAPPING BRANCH



Responsibilities

To carry out all geodetic, topographic and legal surveys and to produce topographical maps and aeronautical charts required for administration, development, and defence purposes.

Long-term Plans

Geodetic Control

To extend horizontal and vertical control as development warrants and facilities permit, and to obtain data from astronomic observations for investigation of the size and shape of the earth.

Mapping

To complete topographical coverage at 1:250,000 by 1967; to provide 1:50,000 and, if necessary, larger scale mapping of major routes of travel and other areas of economic importance or development; to revise air chart bases as better information becomes available.

Aeronautical charting

To revise the portrayal of aids to air navigation on aeronautical charts and pilot's handbooks and to produce new aeronautical charts as required.

Legal Surveys

Management and execution of surveys made to enable land transactions involved in the administration and development of public lands.

Review of 1962 Operations

Geodetic Control

The isolated arc of triangulation between Cambridge Bay and Beechey Lake was connected to the main network east of Fort Reliance. A new arc was started north of Fort Resolution and completed as far as Yellowknife. Work on the Dubawnt Lake - Baker Lake - Chesterfield Inlet arc was continued from Dubawnt Lake to a point north of Tulemalu Lake, approximately 125 miles southwest of Baker Lake. Astronomic control was established at Beechey Lake, Selwyn Lake, near Beaverhill Lake, and at Dubawnt Lake.

Topographic Mapping

(1) Field Work

- a) A traverse of 2300 miles completed control for Ellesmere and Axel Heiberg Islands.
- b) Between Dawson, Mackenzie River, and the Alaska boundary near Old Crow, some 825 miles of spirit levelling was completed for investigation of water-power resources and for basic mapping control.



- c) Supplementary vertical control was established in the Porcupine River Basin to determine water storage possibilities.
- d) Surveys were made for large-scale plots of settlements at Whitehorse, Watson Lake, and Mayo.
- e) Various control surveys assisted the Polar Continental Shelf Project in the Arctic Islands and Dominion Observatory parties on the Penny and Barnes icecaps on Baffin Island

## (2) Map Compilation

- a) Twelve map sheets were completed in Baffin Island for publication at a scale of 1:250,000.
- b) Mapping completed for publication at a scale of 1:50,000 included one map sheet in the Klondike area; thirteen in the Fort Reliance district; two on Barnes Icecap in Baffin Island, and about twenty map sheets representing one-half the area of Ellef Ringnes Island.
- c) Special plots were made of areas around Cape Dorset, Eskimo Harbour, and Mayo. Material was prepared for plots of 31 northern sites by contract.

## Aeronautical Charting

Aeronautical charts were revised as required. The Canada Air Pilot and the military Jet and Low Altitude Pilot's Handbooks were maintained by the production of new, and revision of existing, relevant aerodrome charts.

## Legal Surveys

Yukon Territory - 15 miles of the Canol pipeline were surveyed and 45 miles were inspected from Whitehorse to the British Columbia border. In the city of Whitehorse 68 additional lots were surveyed in the transient area subdivision; 22 city lots were surveyed in an unused section of an old cemetery and a portion of the Riverdale subdivision was revised creating 119 new lots. The Whitehorse airport reserve was partially subdivided, completing 11 miscellaneous lots and an access road. 23 miscellaneous group lots were surveyed at various locations. A discrepancy in the Alaska Highway was investigated at mile 748 and one mile of the Whitehorse-Mayo Highway was relocated. New subdivisions were surveyed at Porter Creek (two subdivisions, 84 lots), Kookatscon Lake (14 lots), McClintock Bay East (16 lots), McClintock Bay West (6 lots), Watson Lake (two subdivisions, 69 lots), Pelly Crossing (36 lots), and Carmacks (5 lots).

Northwest Territories - All surveys made in the Northwest Territories were in the District of Mackenzie. A total of 19 miscellaneous parcels were surveyed in various locations, survey information for Topographic Site plans was obtained at Snowdrift, Lac la Martre,

Rae, Fort Simpson, South Nahanni, Jean Marie River, Wrigley and Fort Providence. An inspection survey was made at Fort Simpson. New subdivisions or additions and revisions to existing subdivisions were surveyed at Fort Smith (80 lots), Hay River (32 lots), Enterprise (additions and revisions), Fort Resolution (22 lots), Fort Providence (28 lots), Fort Simpson (4 lots and roads), Nahanni Butte (9 lots and roads), Lac la Martre (11 lots), and Fort Resolution (22 lots).

At Hay River two new subdivisions totalling 82 lots were surveyed for this office under contract, by a private survey company.

### Plans for 1963

#### Geodetic Control

One triangulation party will continue the arc from Yellowknife towards Coppermine. A second triangulation party will continue the arc easterly from Tulemalu Lake towards Baker Lake and Chesterfield Inlet. Astronomic control will be established along both of these arcs.

#### Topographical Mapping

##### (1) Field work

- a) Establishment of control, for mapping possibly 100 sheets at the 1:50,000 scale between the Mackenzie River and the Yukon - N.W.T. boundary at the request of the Geological Survey and the Department of Forestry.
- b) Vertical control for 1:25,000 mapping of Whitehorse and vicinity.
- c) Local surveys for large-scale plots of northern settlements in southern Yukon and around Great Slave Lake.
- d) Assistance to the Polar Shelf Project.

##### (2) Mapping

- a) Possibly 15 sheets at the 1:250,000 scale on Baffin and Ellesmere Islands.
- b) The remainder of Ellef Ringnes Island (about 20 sheets) at the 1:50,000 scale.
- c) Preparation of material for plots or revisions by contract of about 30 more northern settlements.

#### Aeronautical Charting

Aeronautical chart bases will be revised as new large-scale mapping is made available. Aids to navigation shown on the charts will be revised as necessary. The Canada Air Pilot and the Jet and Low

Altitude Pilots' Handbook will be maintained by production of new, and revision of existing, aerodrome pages.

#### Legal Surveys

Yukon Territory - The largest item will be the restoration of block corners at Dawson City. Three subdivisions (new or additions to existing ones) are planned for Whitehorse and Watson Lake totalling approximately 100 lots. The remainder of the programme will consist of approximately 50 miscellaneous group lots scattered along or adjacent to highways. These deal with land sales, reservations, Indian reserves, cemeteries, garage and maintenance sites, church sites, camp and picnic grounds, etc.

Northwest Territories - Six subdivisions are planned for Norman Wells, Inuvik, Enterprise, Coppermine, Tuktoyaktuk and Kakisa Lake. The number of lots involved totals approximately 130 with the majority at Enterprise. Four rights-of-way are to be surveyed, and 25 miscellaneous parcels dealing with reservations, transmitter sites, airfields, Indian housing, nursing stations, camp and picnic grounds, etc.

INTERDEPARTMENTAL COMMITTEE ON AIR SURVEYS

### Responsibilities

To receive from all federal government services requests for air surveys, and to prepare programmes of air survey priorities; to issue technical instructions for carrying out such programmes; to co-ordinate the activities of commercial and government air survey organizations.

### Long-term Plans

The Arctic Islands and all the mainland of Canada, except for about 20,000 square miles southeast of Ungava Bay, are covered with vertical air photography satisfactory for small scale mapping, and requirements will now be for lower altitude large scale photography of special areas for development, scientific investigations, or large scale mapping.

### Review of 1962 Operations

The high level air photo and APR programme in the Arctic Islands was completed.

Six additional Arctic sites were photographed, and a good portion of the Mackenzie from Wrigley to the mouth was finished.

Bradley Air Services were able to finish the gaps in the Flat and South Nahanni rivers, but were able to get only a very small part of the high level area in the southeast Yukon and southwest Mackenzie District.

About 40% of the area southeast of Ungava was finished, and it is expected this will be completed next summer.

An area covering the icecaps at the head of Purchase Bay on Melville Island was photographed by Hunting Survey Corporation Limited at large scale for mapping and glaciological studies.

Spartan Air Services Limited completed 2500 line miles of APR control lines over Baffin and Ellesmere islands, needed to strengthen the control for mapping.

### Plans for 1963

It is expected that the area southeast of Ungava will be completed in 1963, and this will then give complete vertical coverage of all the mainland of Canada and the Arctic Islands.

The unfinished part of the Mackenzie River will be flown, and it is hoped that the high level area in southeast Yukon and southwest Mackenzie District will be completed.

A contract will be arranged for more up-to-date and better vertical coverage of Nottingham Island in Hudson Strait.

MARINE SCIENCES BRANCH



### Responsibilities

To carry out hydrographic and oceanographic surveys in Arctic waters of Canadian interest.

To produce and distribute charts, sailing directions, tide tables, and reports based on the survey activities and on information from all sources.

To carry out research on the oceanography of the region.

### Long-term Plans

To complete standard hydrographic surveys of the Arctic coast as soon as possible, and to continue the publication and maintenance of up-to-date charts of the region. To carry out reconnaissance surveys where requirements exist for charting ahead of the regular surveys. To maintain reliable sailing directions as published in the Pilot of Arctic Canada. To establish and maintain a network of gauging stations to meet the needs of scientific research. To carry out oceanographic and current surveys to meet the general scientific requirement including that of defence. To improve steadily the capability to carry out fundamental research on Arctic oceanography and the means to conduct observations in the region.

### Review of 1962 Operations

The west half of Barrow Strait was sounded by CHS "BAFFIN" using two-range Decca. A reconnaissance survey was made of Duke of York Sound, Southampton Island, and control surveys were carried out in the vicinity of Digges Island, Hudson Strait. The chartered ship, M.V. "ARCTIC SEALER", carried out surveys along the east coast of Hudson Bay including the approaches to Split Island and Flaherty Island in the Belcher Islands, a passage through Long Island Sound, and a standard survey of Port Harrison.

The new 65-foot launch CHS "RICHARDSON" arrived at her base at Tuktoyaktuk on 6 August. The balance of the season was spent on surveys from Toker Point eastwards to Liverpool Bay. On the Athabasca-Mackenzie waterway a launch party established control between Pointe Desmarais and Matheson Island and made a survey of the new ranges in the vicinity of Fort Providence.

A number of teams of hydrographers and oceanographers were assigned to Department of Transport icebreakers. The largest team sailed north in CCGS "C.D. HOWE" and carried out a reconnaissance survey of Cape Dorset before transferring to CCGS "LABRADOR". The LABRADOR's main project was a survey of Smith Sound but the reconnaissance survey of Alexandra Fiord was also extended. On completion of the hydrographic survey the vessel undertook a programme of oceanographic observations in Baffin Bay and adjacent waters including Jones and Lancaster sounds and Davis Strait.

A combined hydrographic and oceanographic team was assigned CCGS "JOHN A. MACDONALD" and collected data throughout the series of extensive probes carried out by the vessel.

After carrying out control surveys at four DEW Line sites, two hydrographers joined CCGS "CAMSELL" to complete the hydrographic control net from Cambridge Bay to Shepherd Bay and to strengthen the part of this chain established originally by the United States Hydrographic Office in Queen Maud Gulf. The southern part of a new route east of Hat Island was also surveyed.

In cooperation with the National Research Council a study of the operation of a bubbler system to prevent or retard the formation of sea surface ice cover is being carried out in the Tuktoyaktuk area. A scientific officer was attached to the Polar Continental Shelf Project for a brief period to study logistic and other problems related to marine investigations under Arctic conditions. A two-man oceanographic team joined the U.S. Navy icebreaker "Atka" to participate in a survey of North Atlantic waters between Greenland and Iceland and north to 81° north latitude.

The five tide gauges at Tuktoyaktuk, Cambridge Bay, Resolute, Alert and Churchill were checked and maintained. Nine new navigational charts, including the first two of a new series of chart-books of the Athabasca-Mackenzie Waterway, thirty-four revised editions and three new plotting charts covering the Arctic were issued.

#### Plans for 1963

CHS "RICHARDSON" will continue her surveys in the Western Arctic, mainly west of Cape Bathurst. CHL "RAE" will sound the Mackenzie River between Pointe Desmarais and Matheson Island. A reconnaissance will also be made of the Mackenzie River to provide information for the proposed new series of River Charts.

Hydrographers will be assigned to Canadian Coast Guard Ships in the Eastern and Western Arctic to carry out surveys as opportunity permits.

The study of bubbler systems will continue.

A reconnaissance will be made to find sites where additional permanent tide gauges can be installed.

#### Staff:

A total of 185 personnel were employed by the Branch in the Arctic for the 1962 summer season. This includes 16 crew of the chartered ship.

DEPARTMENT OF NATIONAL DEFENCE

ARMY

Responsibilities

Land defence of the North;

Maintenance of the Canadian portion of the Alaska Highway, the Haines Road, the access roads to certain airfields, and seven emergency landing strips connected with the Highway;

Operation and maintenance of the research, development and training centre at Fort Churchill, which is used by the Canadian Armed Services, the United States Air Force and research and development organizations;

Defence mapping requiring the deployment of Army ground survey teams in the field to establish ground control.

Long-term Plans

Normal planning to meet responsibilities. Defence mapping will be continued to complete the Canadian Army's responsibilities in this field.

Review of 1962 Operations

Northwest Highway System (Alaska Highway) and Haines Road

Haines Road

The Haines Road runs from Haines Junction at Mile 159 on the Alaska Highway to Haines, Alaska (Mile 0) in the Alaskan Panhandle. This road crosses the BC-Alaska Panhandle border at Mile 42 and has NOT been kept open in the winter by Canada in the past. The US keeps the road open from Haines to the border and beyond to Mile 48 in Canada, since a US pipeline maintenance section is required to travel to Mile 48 frequently. A new pumping station on the pipeline was opened at Mile 94. It is manned by 6 Canadians, who live with their families in trailers on the site, under existing agreements. In order to supply this station, and pending receipt of a formal application from the US Government, authority was issued to keep the Haines Road open between Haines Junction (Mile 159) and the new pumping station. The US will reimburse Canada for doing this.

Traffic Count. The volume of traffic passing through customs at Mile 1202 on the Alaska Highway, and at Mile 40 on the Haines Road for the calendar year 1962, was:

### Alaska Highway

<u>Northbound</u>			<u>Southbound</u>	
<u>1961</u>	<u>1962</u>		<u>1961</u>	<u>1962</u>
17,776	16,472	Vehicles	14,269	15,921
46,767	45,955	Passengers	41,195	47,206
14,830	21,660	Tonnage	6,323	9,693

### Haines Road

<u>Northbound</u>			<u>Southbound</u>	
<u>1961</u>	<u>1962</u>		<u>1961</u>	<u>1962</u>
6,038	4,312	Vehicles	6,240	4,329
13,396	11,890	Passengers	13,602	12,157
11,981	1,908	Tonnage	3,098	2,624

### Army Survey Establishment

During the period May to August, tellurometer traversing was carried out for horizontal control on the Queen Elizabeth Islands. During September-October, tellurometer traversing was carried out for a Defence Research Board project at Yellowknife. During August, supplies of food and fuel were cached on Cornwallis Island.

### Royal Canadian Corps of Signals

Canadian Army Signals System communications were provided at Whitehorse for the Headquarters, Northwest Highway System and supporting units and at Fort Churchill, for the Headquarters and supporting units.

### Fort Churchill

The primary role of the establishment at Fort Churchill is the acquisition of knowledge and the development of techniques and equipment to enable men to live and fight in the Arctic and sub-Arctic throughout the year. Its secondary role is to provide support facilities for other units having research or operations commitments, such as the United States Air Force - Churchill Research Range.

During the year the Canadian Army conducted Arctic training and various tests and trials of equipment.

The Churchill Research Range (CRR), formerly known as the Rocket Research Facility, was officially re-opened on 1 November by Major-General D.R. Ostrander, Commander of the Office of Aerospace Research, USAF.



### Plans for 1963

#### Northwest Highway System

It is proposed to construct an Army Work Services Workshop and Stores at Whitehorse.

It is proposed to replace the following temporary bridges on the Alaska Highway:

- |                |           |
|----------------|-----------|
| (1) Mile 401.9 | 113 Creek |
| (2) Mile 403.5 | 115 Creek |

#### Royal Canadian School of Military Engineering

At the request of the Department of Northern Affairs and National Resources, the Royal Canadian Engineers will train ten Eskimos as mechanical equipment operators. The course, starting in October will be of 23 weeks duration and will be conducted at the Royal Canadian School of Military Engineering, Camp Chilliwack, B.C.

#### Army Survey Establishment

Horizontal control will be provided for 1:250,000 mapping, using helicopters and light aircraft in the areas Stefansson Island, Prince of Wales Island, Somerset Island and Boothia Peninsula.

#### Fort Churchill

The normal pattern of training and test activities is expected to be maintained with in addition:

Increased firing of upper atmosphere research rockets at the Churchill Research Range in connection with the International Year of the Quiet Sun.

Exercise FROZEN JUMP will take place during the period 28 January - 10 February to train a British parachute company of the 3rd Battalion, The Parachute Regiment, in some aspects of winter warfare.

ROYAL CANADIAN NAVY

### Responsibilities

The support of Canada's external and defence policies in the North by contributing to the maintenance of Canadian sovereignty in the Arctic and by carrying out and supporting operations in Arctic waters. Operation and maintenance of naval radio stations in the North.

### Long-term Plans

To maintain close liaison with agencies investigating various defence problems in the Arctic.

To facilitate further development of an Arctic Defence Plan.

### Review of 1962 Operations

#### Ship Operations

An RCN frigate squadron of 5 ships operated in Hudson Bay on training duties in August. During this cruise, two frigates visited Port Harrison, later joining the remaining frigates at Port Churchill for a short squadron visit there.

#### Naval Radio Station Frobisher

Seasonal naval radio activities were carried out in Frobisher in support of DEW Line re-supply operations.

#### Alert Radio Station

The RCN continued to contribute personnel for the joint operation of the Alert Radio Station.

#### Other Naval Radio Stations

Naval radio activities were carried out at Churchill and Inuvik.

#### Clearance Diving Teams

Two RCN clearance diving teams provided assistance in connection with DEW Line re-supply in both the Eastern and Western Arctic. The teams were employed on landing beach surveys and underwater obstruction demolition in advance of the supply programme.

### Plans for 1963

RCN clearance diving teams will be made available to provide assistance in DEW Line re-supply.

Operation of naval radio stations will continue at the present level of activity. It is anticipated that a construction programme of 37 additional married quarters will begin at Inuvik.

The RCN will continue to support other Government Departments in scientific and technological research programmes in the Arctic.

ROYAL CANADIAN AIR FORCE

Responsibilities All aspects of air defence. Operation of service airfields in the North. Arctic aerial surveillance and other reconnaissance flights. Air re-supply of Arctic weather stations and the Army station at Alert; search and rescue operations, including mercy flights and emergency supply when no commercial services are available; co-operation with scientific and government parties in the North as required.

Long-term Plans

To continue present activities.

Review of 1962 Operations

Arctic Reconnaissance

Six hundred and eighty hours were flown in general reconnaissance and surveillance of the Arctic Islands and of the Polar Basin by Lancasters of 408 Sqn.

Airlift

In addition to numerous special flights in the north, some 1,200 hours were flown in the Arctic and a total of 8,870,000 lbs. was airlifted.

Search and Rescue

Eight major search operations were conducted for missing aircraft north of 55° latitude. These operations were instrumental in saving nine lives, and involved over 2,250 hours of flying time by the RCAF and other agencies. There were two unsuccessful searches in the area involving five lives.

Survival Training

Seven Arctic Survival Training Courses were conducted at Resolute during the winter. In addition to RCAF trainees, a number of representatives of foreign services and civilian organizations took part.

Distant Early Warning Line

The Canadian portion of the DEW Line was under the operational control of the Commander, Northern NORAD Region, St. Hubert. Control was exercised through an RCAF commander at Northern NORAD Region Headquarters and his staff of five RCAF officers at each main station in Canada.



## Plans for 1963

### Arctic Reconnaissance

Reconnaissance of the Arctic Islands and of the Polar Basin will continue on approximately the same scale.

### Airlift

Airlift for resupply of the Arctic weather stations will be provided by aircraft operating from Resolute in April and September using C-130B Hercules aircraft. Emergency supply drops will be made as required. Approximately 900 tons of POL will be airlifted from Thule to Alert in April, and approximately 2,000 tons of supplies and POL will be lifted in September. About 100 tons of POL and supplies will be distributed to caches in the Melville and Prince Patrick Island areas.

### Search and Rescue

Search and rescue operations will be conducted as necessary.

### Survival Training

Arctic Survival Training will be carried out during the winter months from Resolute.

DEFENCE RESEARCH BOARD

### Responsibilities

To bring scientific knowledge and experience to the assistance of the Armed Services in solving problems of military operations in high latitudes. To sponsor and undertake research and technical projects of particular assistance to the Armed Services.

### Long-term Plans

Research projects of two main types will be conducted: basic studies in the laboratory, and applied studies or field investigations. Almost every aspect of science is involved, with emphasis on factors, particularly cold, affecting the behaviour of man and his machines, and the physical sciences affecting communications, movement, and navigation in and under the sea, on land, in the air, and in outer space.

### Review of 1962 Operations

The Defence Research Board conducted research projects on arctic and geophysical problems through its Physics, Engineering and Biosciences directorates at Ottawa, the Defence Research Northern Laboratory at Fort Churchill, the Defence Research Telecommunications Establishment at Ottawa, the Prince Albert Radar Laboratory, the Defence Research Medical Laboratories at Toronto, the Pacific Naval Laboratory at Esquimalt, and the Canadian Armament Research and Development Establishment at Valcartier. It also supported and coordinated research in the north by means of grants and contracts to universities, government agencies, and non-government research organizations. Close collaboration was maintained with research and development agencies in the United States and Britain.

### The Defence Research Northern Laboratory

The Defence Research Northern Laboratory at Fort Churchill continued in the role adopted in 1956 - that of a northern laboratory for visiting scientific teams, made up of about five professional and thirty-five technical and administrative staff. In addition to ad hoc and short-term projects, work was continued on the growth and degeneration of sea and river ice, and auroral observation studies.

The rocket research operations at Fort Churchill were sharply curtailed as a result of a fire in February 1961 which completely destroyed the main power plant, preparation building, blockhouse and much of the range instrumentation. A reconstruction programme was undertaken commencing early in 1962 to include the provision of a new blockhouse, operations building, hazardous assembly building, power and heating plant and all-purpose launcher. The construction work was finished in December to permit normal operations to recommence in 1963.

### Radio Physics

With the launching of the Canadian top-side sounder satellite, Alouette, from the US Pacific Missile Range on 29 September, Resolute Bay assumed a new importance in DRB's programme of ionospheric studies. This is one of the three Canadian telemetry stations for the satellite. Because the orbit of the Alouette is inclined at an angle of about  $80^{\circ}$ , data are relayed from the satellite to the Ottawa control station via Resolute Bay on almost every pass which the spacecraft makes over the Arctic. New low-power ionosondes installed at Baker Lake, Frobisher and Goose Bay are used to sound the ionosphere from below while the satellite sounder makes measurements from above. The rest of the programme of ground-based radio measurements was continued at a slightly reduced level. Routine vertical and oblique incidence soundings were carried on with the help of the Department of Transport at Resolute Bay and Churchill. The chain of riometer stations measuring cosmic noise across the auroral zone continued in operation also with the assistance of the Department of Transport.

### Geophysical work in northern Ellesmere Island

The Defence Research Board continued to maintain Hazen Camp in northern Ellesmere Island from mid-May to late August as a field station for geophysical and biological studies. Soil studies and meteorological observations were continued from previous years under a contract with McGill University, and facilities were provided for a Department of Agriculture field party to continue entomological and botanical studies in the area.

A small party spent four days at the head of Tanquary Fiord in late May, and chose a site for a small field station; they also collected limited scientific data. Housing, fuel, stores and equipment were laid down at the chosen site by CCGS John A. Macdonald in late August. The Ward Hunt Ice Shelf was visited in early June in order to assess the nature and extent of ice shelf breakaway in the 1961-62 winter, when more than 200 square miles of new ice islands were formed.

### Under-Ice Acoustics

A study of acoustic propagation and ambient noise under ice was begun at the Pacific Naval Laboratory in 1959. In May 1962 operations were extended into the Arctic Ocean, landings being made on the ice by an RCAF Dakota up to 250 miles from land. A cooperative programme was carried out with the U.S. floating stations Arlis II and T-3, at ranges of about 1,000 miles. Additional exploratory flights and landings were made by the RCAF to a distance of 800 miles from shore.

### Conjugate Point Experiment

The Pacific Naval Laboratory, in cooperation with Stanford University, continued a combined programme to obtain simultaneous measurements of geomagnetic micropulsations at Byrd Station in the Antarctic and

its conjugate point near Cape Jones in Canada. Records both on paper charts and magnetic tape have been very successful and should provide data for computing diurnal and seasonal variations in the range from 2 to 30 cycles per second, with some significant information down to 50 seconds period.

#### Vehicle Mobility Studies

Work on the fundamental soil/vehicle relationships has proceeded at the Vehicle Mobility Laboratory, CARDE, and reports are in preparation. Joint trials were held with the US Army of the trafficability of numerous muskeg vehicles in confined muskegs in the Parry Sound area in July and August. The Organic and Associated Terrains Research Unit (OATRU) of McMaster University also participated in these trials.

Due to the difficulty of recruiting suitable scientific staff and the resulting uneconomic scale of effort, DRB has decided to close the Vehicle Mobility Laboratory at the end of the current fiscal year, and is investigating alternative means of supporting research in this field.

#### Biting Flies

The Department of Agriculture, with the support of the Defence Research Board, expanded its activities in the Lake Hazen, Ellesmere Island, region. A large number of species of insects was collected and, although mosquito levels were high for almost four weeks, the population consisted entirely of two species. These species also exist in much more southerly areas so the Lake Hazen studies resulted in many interesting contrasts in insect behaviour, life cycle, etc.

A stick form of the standard military biting fly repellent, diethyltoluamide, has been developed and is undergoing laboratory and field tests. The stick repellent is considered to be more easily applied to the skin and less likely to be wasted than the fluid formulation.

#### Clothing and Cold Weather Refuelling

The problem of static electricity hazard while fuelling aircraft in cold weather has been shown to be principally one of static charge generated within the aircraft fuel tank by high speed pressure refuelling. The suspicion that nylon/cotton clothing was responsible has been largely removed.

#### Environmental Physiology

Studies at the Defence Research Medical Laboratories of the effects of cold environmental temperatures on metabolism and cardio-vascular physiology are in abeyance because of shortage of professional staff. However, experiments to determine the metabolic effects of hypothermia were continued by means of animal studies.

## Grants and Contracts

A number of extra-mural studies were supported by grants or contracts with universities and other non-government agencies.

### Grants

- (1) To McMaster University for a study of methods of interpreting surface and sub-surface conditions in muskeg from air photographs.
- (2) To McGill University for a study of micrometeorological factors affecting climate of Canadian forests.
- (3) To McGill University for research on the shearing characteristics of frozen soil.
- (4) To the Institute of Northern Studies, University of Saskatchewan, for research on the sub-arctic sand dunes south of Lake Athabasca.
- (5) To the Arctic Institute of North America for a heat budget analysis of Jones Sound.
- (6) To the Arctic Institute of North America to assist in the preparation of an Arctic Bibliography.
- (7) To McGill University for a study of the radiation characteristics of the sub-arctic.
- (8) To McGill University for work on the reactions of the constituents of the upper atmosphere.
- (9) To the University of Saskatchewan for the support of research at the Institute of Upper Atmospheric Physics.
- (10) To the University of Western Ontario for research on the physics of the troposphere as related to UHF radio transmissions.
- (11) To the Canadian Military Services College, Royal Roads, for a study of the roles of the ionosphere and sun in the origin of the natural electro-magnetic background in the frequency range 0,001 c/s to 100 Mc/s.
- (12) To the University of Toronto for studies of hypothermia and endocrine function, the biochemical mechanisms involved in cold adaptation, and the effects of cold on pharmacological reactions.
- (13) To McGill University for studies of the effects of cold injury on the vascular system and the pathogenesis of cold injury.
- (14) To the University of Manitoba for studies of frostbite and cold acclimatization and for support of an Arctic Medical Research Unit.



- (15) To the University of Ottawa for studies of endocrine function of cold-exposed animals and of resistance and acclimatization to cold.
- (16) To Laval University for a study of circulatory adaptation to cold stress.
- (17) To the University of Alberta for research on the flight range of biting flies.
- (18) To Queen's University for research on the reactive principles and specificity of bites of bloodsucking arthropods with particular reference to mosquitoes.
- (19) To the University of Western Ontario for a study of factors in the attractiveness of objects to adult Aedes aegypti.
- (20) To the University of Manitoba for research on the behaviour of biting flies with special reference to orientation and feeding.
- (21) To the University of Alberta for field studies on mosquito biology.
- (22) To the Ontario Agricultural College for studies on the life history and ecology of Simulium ruggelesi.
- (23) To the University of Saskatchewan for research on the retrocerebral endocrine system in prairie mosquitoes.
- (24) To the University of Western Ontario for a study of the reaction of men and animals to cold and damp.
- (25) To the University of Alberta for an investigation of the mode of action of biting fly repellents.

#### Contracts

- (1) With McGill University for research on ice physics, with special reference to removing ice from runways and the study of sea ice.
- (2) With McGill University for meteorological and geophysical work at Lake Hazen.
- (3) With the Arctic Institute of North America to provide limited consultant work.
- (4) With the Scott Polar Research Institute for the provision of data resulting from the Institute's work in polar research.
- (5) With McGill University for a study of terrain evaluation and classification for mobility.

- (6) With McGill University for stratospheric research, and for the production of an atlas of 25-mb synoptic weather maps for the Northern Hemisphere.
- (7) With the University of Western Ontario for spectroscopic studies of upper-atmospheric excitation, ionization, and recombination processes.
- (8) With the University of Saskatchewan for optical studies of auroral phenomena at Fort Churchill, Manitoba.

#### Plans for 1963

It is expected that the Board's programme will be continued on approximately the same scale as in 1962.

Alouette telemetry and existing programmes of ground-based radio measurements will continue throughout 1963. A start will be made on the installation of a new high-power low-frequency ionosonde at Resolute Bay for special studies of the lower ionosphere.

It is intended to maintain Hazen Camp as a field research station, and in addition to run a programme of geophysical and other work at Tanquary Fjord. This will be an areal extension of the work done from Hazen in the past years. The unusual insect situation at Lake Hazen will also be further investigated, with emphasis on the differences in basic biology resulting from this environment, and the survey will be extended to coastal areas.

The acoustic programme will be continued with a midwinter (Jan-Feb) programme of listening to natural ambient noise at Isachsen.

NATIONAL FILM BOARD

### Responsibilities

The production of motion pictures, filmstrips, still photographs, and still photo stories about the Canadian North, its people and their activities, and its resources; arrangements for distribution of this film material in Canada and abroad, including servicing of northern posts and settlements; assistance to government agencies by advising in the use of visual media and in planning audio-visual programmes for informational and instructional purposes.

### Long-term Plans

Normal planning to meet responsibilities.

### Review of 1962 Operations

The production of filmstrips of northern geographical, cultural, and historical interest was greatly expanded, stills photostories were produced, and film distribution services were improved and expanded, effectively bringing the Canadian story to the peoples of the north, and stories of the north to the rest of Canada and the world.

### Production

The following films related to the north were produced:

YUKON OLD, YUKON NEW - A film produced in English and French for the Department of Northern Affairs and National Resources to promote interest in and attract tourists to the Dawson Festival.

NAHANNI - The story of Albert Paille, an aging prospector of Fort Simpson, and his yearly trip up the Nahanni to Headless Valley in search of gold.

LA SOIF DE L'OR - THE GOLD SEEKERS - A historical reconstruction of the turn-of-the-century mining developments in Northern Ontario and Abitibi regions, produced originally in French with an English version.

UP NORTH (Eskimo Art Colony) - An eleven minute black and white screen magazine item about the cooperative venture of Dorset Eskimos in stone carving and print making.

STEFANSSON - LARSEN - Discussions between these two northern experts against the background of the Arctic, produced originally for television distribution.

Newsreel coverage included INUVIK, the new type of northern town; EXPLORING THE ARCTIC SEA; FRESHWATER LAKE NEAR THE TOP OF THE WORLD.

The following photostories dealing with northern subjects were produced for sale to Canadian and foreign newspapers: Restoration of Barkerville, B.C.; Festival at Dawson City; Christmas at Pelly Bay. These photostories reached total Canadian audiences of 12 million and were distributed in 34 countries abroad.

Photostills coverage of the north for inclusion in the NFB Stills Library was further broadened by the production of stills by NFB photographers and the acquisition of colour transparencies and black and white shots from various photographers.

### Filmstrips

The following eight northern filmstrips, designed primarily for classroom use were completed: ESKIMO SCULPTURE, ESKIMO PRINTS, CANADA'S NORTH: INTRODUCTION, CANADA'S NORTH: MACKENZIE RIVER - HIGHWAY TO THE NORTH, CANADA'S NORTH: THE MODERN ESKIMO, CANADA'S NORTH: THE CARIBOU ESKIMO, CANADA'S NORTH: THE ARCTIC ISLANDS, CANADA'S NORTH: THE YUKON.

### Distribution

The 16mm film service from the four main distribution outlets at Whitehorse, Fort Smith, Ottawa, and Montreal again showed an increase in activities, with 4672 screenings of Film Board productions to which must be added 5361 screenings through smaller film centres across Northern Canada. In the areas of Fort Vermilion, Uranium City, Churchill, Northwestern Manitoba and northern British Columbia a greatly expanded programme provided new film supplies and circuits. More than 120 northern communities, schools, weather stations and outposts were provided with 16mm film service. Thirty-nine 16mm sound projectors and fifteen portable 110 volt AC generators were on loan to isolated communities. Schools in the North continued to receive an increasing number of NFB filmstrip productions.

The NFB Central Outpost Film Library lent 624 film prints to Northern supply ships, icebreakers, and a network of isolated weather stations in the Eastern Arctic. Labourer-teachers from Frontier College used NFB films at 361 screenings to aggregate audiences of 21,000 in railway construction camps, isolated mining areas, and lumber camps. Eight monthly circuit film programmes together with utilization materials were distributed to schools and communities in the Yukon and Northwest Territories with additional sets circulated throughout all the provinces, giving special attention to isolated northern posts and Indian schools.

The growth of television series to the North provided viewers in Dawson Creek, Prince George, Thompson, Timmins, Rouyn-Noranda and Goose Bay a greater opportunity to see NFB productions.

Three northern subjects were released in Canadian theatres:

NAHANNI, JOURNLY FROM ZERO, and UN METIIR POUR IKALUK. Forty 16mm prints of YUKON OLD, YUKON NEW were issued for use in tourist film shows and community programming in Canada; 163 prints were issued for use abroad. Special screenings of films about Northern Canada were given at the Seattle Fair and other fairs and exhibitions in Canada and abroad.

NFB films about Northern Canada were exceptionally popular, and were widely circulated in Canada and many other countries to theatres, television, and 16mm adult and school showings. CITY OF GOLD and CAPITALE D'OR for example which were released in 1957 have won 18 awards in film festivals, and have received over 10,000 theatrical bookings in Canada and abroad. Ten foreign language versions have been made for international use, over 330 prints have been circulated, there have been 84 telecasts, and Canadian 16mm screenings number 5512. Another film, DOWN NORTH - UN FLEUVE A' DECOUVRIR, has reached 4365 screenings and 15 telecasts since release in 1958.

#### Plans for 1963

The following films will be released:

KENOJUAK - a 35mm colour film of Eskimo print making in Dorset, produced with the cooperation of the Department of Northern Affairs and National Resources, for theatrical and non-theatrical distribution.

TUNDRA - one of the ecology film series which includes ABOVE THE TIMBERLINE, SPRUCE BOG, LIFE IN THE WOODLOT, and WORLD IN A MARSH.

GLACIATION - a study of the effects of glaciation on this continent and particularly Canada.

A filmstrip on glaciation will be produced. Other filmstrips related to the north for classroom use will be: a series of geography filmstrips on the Precambrian Shield, a historical series on fur trading, and one junior science strip about Arctic wildflowers. Four filmstrips will be made for the Education Division of the Department of Northern Affairs and National Resources, entitled: WHAT IS GOVERNMENT?; GOVERNMENT IN ACTION; THE STRUCTURE OF THE GOVERNMENT OF THE NORTHWEST TERRITORIES; HISTORICAL DEVELOPMENT OF THE NORTHWEST TERRITORIAL GOVERNMENT.

National Film Board films, filmstrips and photostories about Northern Canada will be widely distributed in Canada and abroad through 16mm, theatres and television. Many foreign language versions will be circulated abroad through Canadian posts, embassies and television and theatrical distribution. Close liaison will be maintained with government departments serving northern areas to extend existing film services. Projectors and generators will remain on loan in northern posts. NFB distribution officers will provide assistance, including visits to Northern areas as required.



Eight monthly programmes will be provided for circulation; block deposits of films will be issued for use in the North from NFB Central Outpost Library.

DEPARTMENT OF NATIONAL HEALTH AND WELFARE

HEALTH

Responsibilities

Northern Health Service

All responsibilities of the federal government in the field of health, except where military authorities operate health facilities within military establishments.

All responsibilities of the territorial governments in the field of health, undertaken by arrangements with these governments, except the hospital insurance programme. These arrangements are subject to the sharing of costs between the federal and territorial governments in approximate proportion to their respective responsibilities.

Consultative Services

Public Health Engineering, Epidemiology, Maternal and Child Health, etc. on request of the responsible authorities.

Long-term Plans

To develop northern health services, to co-ordinate all federal health services, and to co-operate with community health services in the same manner as would a department of health in a province. This system should, within the budgets of the interested agencies, provide for the types of health services most suitable for the unique distribution of population. The operation by the Northern Health Service of health units in the Northwest Territories formerly operated by the Indian Health Service will continue. New facilities will be developed, in co-operation with the Department of Northern Affairs and National Resources, as and when the need for them is demonstrated and resources are made available.

Review of 1962 Operations

The Health Services Plans, Yukon and Northwest Territories, 1962-67, went into effect on 1 April.

In the Yukon there was an increase in utilization of the Whitehorse General Hospital by both Indian and white patients. A resident nurse was placed at the Haines Junction Health Centre and by the end of the year conversion of the Watson Lake Health Centre to a nursing station of 4 beds had been almost completed. The public health programme continued but the supervisor of nursing and sanitarian had not been recruited by the end of the year. Measures to combat venereal disease continued, the Yukon having the highest rate of any area in Canada. The annual chest X-ray campaign continued.

In the Northwest Territories the Territorial Government and Northern Health Service shared in the operation and maintenance and capital costs of all Departmental units. Nursing stations at Tuktoyaktuk,

Eskimo Point, Spence Bay, and Coral Harbour were completed. Northern Health Service took over the operation of the company hospital at Rankin Inlet.

Construction of the 28-bed hospital at Frobisher Bay began. Plans for the health centres at Yellowknife and Hay River were completed and work on the Yellowknife Health Centre was well advanced by the end of the year. A second public health nurse was located at Yellowknife, spending part of her time at Rae.

Northern Health Service provided professional advice to the Territorial Hospital Insurance Services Board in connection with improvements to non-government hospitals. During the year improvements were made to the hospitals at Hay River and Fort Smith and plans were almost completed for improvements to the hospital at Yellowknife.

Case finding services were carried on throughout the Mackenzie Valley and the Western, Central and Eastern Arctic. The incidence of tuberculosis and venereal disease in the Territories remained high.

There were epidemics of measles on Melville Peninsula (413 cases with 9 deaths), at Frobisher Bay (268 cases -- 100 of them amongst the white population -- with 7 deaths), at Inuvik (150 cases, no deaths) and at Cambridge Bay (40 cases, no deaths). In the Igloolik area there were 16 cases of trichinosis from eating walrus meat, with 4 deaths. There were 75 cases of influenza at Spence Bay with 2 deaths. Typhoid fever appeared in a 13 year old Eskimo girl at Cape Dorset and there were 2 cases of dysentery at Cambridge Bay.

An outbreak of anthrax in the Fort Smith area killed nearly 300 buffalo. There were 2 human cases both of whom survived.

A workshop for training Indian community health workers was held at Yellowknife.

#### Plans for 1963

Construction of the Frobisher Bay hospital should be almost complete by the end of the year. The Yellowknife and Hay River health centre will be completed. It is hoped that health stations will be placed at Igloolik and Clyde River.

The public health programme outlined in the Health Services Plan, Northwest Territories, 1962-67 (Revised) will not progress as quickly as planned because of difficulties in recruiting the sanitarian, dental officers, and the health educator. Progress should be barely satisfactory using existing staff and facilities.

A community health worker training programme will continue but on a reduced scale.

Tuberculosis case finding services will follow the same lines as in 1962. Other medical and dental services will be conducted as usual according to the need and the availability of personnel.

In co-operation with the Legal Division of the Department of Northern Affairs and National Resources it is expected that a new Mental Health Ordinance will be drafted for the Northwest Territories and new Regulations will be prepared governing the harvesting, preparation, and packaging of food for sale, as well as sanitary conditions in barber shops and various other premises open to the public.

It is expected that a supervisor of nursing will be recruited for the Yukon Territory.



WELFARE

### Responsibilities

Administration of Family Allowances and Old Age Security Programme with the co-operation of the Department of Northern Affairs and National Resources and other agencies. Assistance to elderly, blind, disabled and needy unemployed residents of the north. Assistance to Territorial governments through Fitness and Amateur Sport Programme.

### Long-term Plans

Normal planning to meet responsibilities.

### Review of 1962 Operations

#### Family Allowances

In the combined jurisdictions of the Yukon and Northwest Territories a total of \$1,287,539 was paid in Family Allowances, with 6,482 families and 17,343 children on the rolls at the end of the year.

#### Old Age Security

A total of \$513,711 was paid in Old Age Security pensions of \$65 a month, with 678 persons on the rolls.

#### Social Allowances

Under agreements with the Yukon and the Northwest Territories, the Department of National Health and Welfare pays 50 per cent of the costs to the Territories of Old Age Assistance and Disabled Persons Allowances and 75 per cent of the costs of Blind Persons Allowances. In each case the maximum allowance shareable was \$55, up to February 1, 1962, in the case of the Yukon Territory and to July 1, 1962, in the case of the Northwest Territories; since these dates the maximum allowance was \$65. On December 31st, 1962, in the Yukon, 35 persons were covered under Old Age Assistance, four under Blind Persons Allowances, and six under Disabled Persons Allowances; in the Northwest Territories 150 persons were covered under Old Age Assistance, 45 under Blind Persons Allowances and 21 under Disabled Persons Allowances.

Federal payments to the Territories during the year amounted to \$67,581.44 for Old Age Assistance, \$24,588.75 for Blind Persons Allowances and \$9,315.00 for Disabled Persons Allowances.

#### Unemployment Assistance

Under the Unemployment Assistance Agreements the Department of National Health and Welfare shares with the Yukon and the Northwest Territories the costs of their social assistance payments. Since claims may be submitted up to six months after the end of the month to which they relate, complete figures are available, at the time this report is prepared, only up to the end of June 1962. Total payments during the first six months of 1962 amounted to \$23,463.00 to the Yukon and \$16,344.00 to the Northwest Territories. The

average number of persons assisted each month was 235 in the Yukon and 287 in the Northwest Territories. Average monthly payments were \$30.64 for the Yukon and \$20.09 for the Northwest Territories.

#### Fitness and Amateur Sport

Under the Fitness and Amateur Sport Programme federal payments of \$15,057 to the Yukon and \$15,091 to the Northwest Territories were made in 1962-63 through a "Planning and Organization Grant". Identical sums were made available for projects under the programme.

#### Plans for 1963

Plans are similar to those for 1962 except that under the Fitness and Amateur Sport Programme the amounts made available have been raised to \$35,468 for the Yukon and \$35,749 for the Northwest Territories, grants to be made on a project and matching basis, with the federal government contributing 60 per cent, and the Territory 40 per cent, subject to no matching contribution being required for any of the Territorial allocation used for undergraduate scholarships or bursaries.

NATIONAL RESEARCH COUNCIL

Responsibilities      Investigations into various phases of pure and applied sciences in northern Canada.

Long-term Plans

At present, three Divisions of the National Research Council have a continuing interest in the North.

The Division of Pure Physics is concerned with cosmic ray measurements.

The Division of Building Research carries out studies of permafrost and northern building problems.

The Division of Radio and Electrical Engineering carries out radio and optical observations of upper atmospheric phenomena, e.g. the aurora, during minimum and maximum peaks of the sunspot cycle.

Other Divisions of the National Research Council become involved periodically with northern work on a short term basis.

Review of 1962 Operations

Division of Pure Physics

Cosmic ray observations were continued at Resolute to study intensity changes in the cosmic ray flux in relation to solar activity and magnetic fields in the interplanetary plasma affecting the cosmic ray flux. Observations were also continued at Churchill, Manitoba, with equipment operated by the D.R.N.L. of the DRB for the Division.

Division of Building Research

Special emphasis has been placed on studies of permafrost related to engineering problems encountered in the southern fringe area of the permafrost region. Detailed field investigations were made of the various factors affecting the occurrence and distribution of permafrost at the townsite of Thompson in northern Manitoba. The first of a proposed series of surveys to be carried out in the southern boundary area was completed when studies were made along the Mackenzie Highway in northern Alberta and the Northwest Territories south of Hay River.

Field studies to follow the performance of engineering structures constructed on permafrost were continued at the townsite of Inuvik and the Kelsey Hydro plant in northern Manitoba located in the continuous and discontinuous zones of permafrost respectively.

The collection of information relating to the occurrence and distribution of permafrost in Canada as a whole was continued. Several thermocouple cables to measure ground temperatures to depths from 50 - 200 ft. were fabricated and installed near Sugluk, P.Q.

A detailed programme was organized for studying the serious condensation problems occurring in northern houses and buildings. This study includes regular surveys of temperature, humidity and condensation in selected houses in which certain construction modifications have been made.

#### Division of Mechanical Engineering

The air bubbler around the Department of Public Works wharf and the oceanographic environment at Tyutoyaktuk, N.W.T. were studied in detail to gain an understanding of the operation of air bubbler systems in sea water.

#### Plans for 1963

#### Division of Pure Physics

Cosmic ray measurements will be continued at Resolute and Churchill. Cosmic ray equipment will be installed at Inuvik. Enlargement of the facilities and equipment at Resolute and Churchill is planned for 1964, and the erection of a station at Fort Chimo is also planned for 1964.

#### Division of Building Research

Field studies of permafrost and the performance of engineering structures and facilities founded on perennially frozen ground will be continued at Inuvik and at Thompson and Kelsey in northern Manitoba. Reconnaissance surveys in the southern fringe area of permafrost are proposed for northern Saskatchewan and Manitoba. Planning and shipment of equipment for a drilling programme in 1964 to determine the distribution of permafrost under bodies of water near Inuvik will be carried out. Studies of building super-structure problems related to condensation will be continued.

#### Division of Mechanical Engineering

Observations on the air bubbler system at Tuktoyaktuk will be continued. No other specific work is planned in the north but various research and development programmes will be continued.



DEPARTMENT OF NATIONAL REVENUE

CUSTOMS AND EXCISE

Responsibilities

To administer the Customs and Excise laws and regulations, particularly the Customs control of movement of aircraft and vessels.

Long-term Plans

To increase Customs service in pace with the development of the north.

Review of 1962 Operations

In the Yukon Territory, Whitehorse and Dawson were operated as Customs ports. These ports had sub-offices at Beaver Creek (formerly at Snag Creek), Carcross, and Pleasant Camp, B.C., and at Little Gold Creek and Old Crow respectively.

The regular Customs Office at Frobisher Bay, N.W.T., was operated by one full-time officer under the jurisdiction of the Port of Ottawa. The Inuvik office was operated on a part-time basis by an employee of the Department of Transport, under the jurisdiction of the Port of Edmonton.

At nineteen points officials of other government departments acted as Customs Officers for the purpose of clearing ships and aircraft. These were as follows:

Royal Canadian Mounted Police

Baker Lake	Pangnirtung
Cambridge Bay	Pond Inlet
Chesterfield Inlet	Resolute
Coppermine	Sachs Harbour
Eskimo Point	Spence Bay
Herschel Island	Tuktoyaktuk
Lake Harbour	

Quebec Provincial Police

Fort Chimo, P.Q.

Department of Transport

Alert	Isachsen
Eureka	Mould Bay
Coral Harbour	Inuvik

Plans for 1963

Normal planning to meet responsibilities.

The seasonal office at Little Gold Creek will not be re-opened in the spring, but a reporting station is to be established in Dawson to handle traffic from Alaska.

TAXATION DIVISION

Responsibilities      Assessment and collection of Income Taxes and Estate Taxes.

Long-term Plans

Normal planning to meet responsibilities

Review of 1962 Operations

Taxation matters in the Yukon Territory were handled through the district office at Whitehorse and those of the Northwest Territories through the district office at Edmonton.

Plans for 1963

The establishment of the Whitehorse office is a small one of only six persons and will be at full strength during the year.

Taxation matters in the Northwest Territories are dealt with by periodic visits by members of the Edmonton office staff to Yellowknife, Watson Lake, Fort Smith and other centres as necessary; this procedure remains unchanged.

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES



CANADIAN WILDLIFE SERVICE

### Responsibilities

Surveys and inventories of wildlife resources; conducting research on wildlife species in relation to their habitat; collection and analysis of animal population and utilization data; recommending management procedures for particular species of economic importance; acting as consultants on fisheries and marine mammals; research, management, and administration of migratory birds under the Migratory Birds Convention Act; co-ordination of federal, provincial, and territorial action on common wildlife problems, including caribou research and management, and wildlife disease studies.

### Long-term Plans

To continue the studies of major wildlife resources: to extend research to less-known species; to establish more adequate research facilities in the field; to assess the success achieved in management of wildlife resources to date, and the potential success in this endeavour for the future.

### Review of 1962 Operations

#### Mammalogical Projects

Caribou range studies were continued north of Great Slave Lake in order to assess the extent of forest fire damage and its effect upon plants used as food by caribou in winter.

The wolf study was continued, with special attention being given to the Thelon River drainage. Young wolves were captured, and will be kept in captivity in order to study their biology and behaviour.

Arctic foxes were studied in the Keewatin and Franklin Districts, particularly in the vicinity of Aberdeen Lake.

The distribution, biology, and ecology of polar bears were investigated on Southampton Island and in the vicinity of Resolute Bay, Cornwallis Island.

A study of the diseases and parasites of northern mammals was undertaken, with special attention being accorded to bison in Wood Buffalo National Park, reindeer near Inuvik, Arctic fox from Cornwallis Island, and beaver from southern Mackenzie District. An anthrax outbreak in bison north of Wood Buffalo National Park received immediate and concentrated attention. Studies of bison were continued in Wood Buffalo National Park and the adjacent part of the Mackenzie District with special reference to population statistics and range conditions. Attention was given to constructing holding facilities so that some of the wood bison in the Park could be captured for moving elsewhere.

The effect of fall-out in the north was kept under surveillance, and specimens were collected for analysis. Lichens and sedges on which caribou feed concentrate fall-out and appear to pass radioactive material in this way to the animals, and hence to caribou hunting people.

#### Ornithological Projects

Studies of breeding waterfowl in the Anderson River Delta and Banks Island were continued in the spring and summer.

A waterfowl banding operation in the Perry River area was carried out in co-operation with a university student.

A study of the life history, hunting kill, and utilization of blue and lesser snow geese in James Bay was continued, as were aerial surveys of whooping crane breeding areas in Wood Buffalo National Park.

#### Plans for 1963

#### Mammalogical Projects

The caribou range study will be continued in the caribou wintering area between Fort Smith and the east arm of Great Slave Lake.

The wolf study will be continued in Keewatin and additional attention will be given to the vicinity of Wood Buffalo National Park where the use of poison for control has not been so intensive, and where there is a greater concentration of wolves.

Arctic fox studies will be continued in the Franklin and Keewatin Districts, and an attempt will be made to keep animals in captivity to obtain comparative biological information.

The study of polar bears in the eastern Arctic will be continued, with special reference to the denning areas on Southampton Island and the adjacent area.

Caribou management studies have been given new impetus by the assignment of an officer to a specific programme of federal-provincial co-operation. His duties include hunter education, collection of management information, and an increased programme of caribou tagging. The investigation of caribou physiology will be continued, with an attempt being made to capture more caribou for laboratory studies. Yukon big-game studies have been resumed with the re-establishment of a biologist at Whitehorse for that purpose.

Muskrat, beaver, and mink studies will be continued on an experimental trapping area near Inuvik.

The beaver study in southern Mackenzie District will probably end. Studies of diseases and parasites of northern animals will be continued, with special attention to bison, reindeer, and caribou, as well as foxes, bears, muskrats, and related aquatic fur bearers. Studies of anthrax will be enlarged to determine the effect of the disease on bison and other wildlife.

Investigation of bison ecology and movement will continue in Wood Buffalo National Park, and an attempt will be made to learn more about bison nutrition.

A number of young wood bison will be captured and transferred to holding and testing facilities near Fort Smith for restocking purposes.

Work on the effect of fall-out in animals in the north will be expanded.

#### Ornithological Projects

A continuing study of breeding waterfowl in the Mackenzie Delta and Anderson River Delta regions will be conducted.

A waterfowl banding operation in the Perry River area will be carried out by a student assistant.

The study of the life history, hunting, kill, and utilization of blue and lesser snow geese in James Bay will be continued.

An inventory of the distribution of sea-birds off the Newfoundland and Labrador coasts will be continued.

Aerial surveys of whooping crane breeding areas in Wood Buffalo National Park will be continued.

NATIONAL MUSEUM OF CANADA

Responsibilities      Investigations relating to the archaeology, physical anthropology, ethnology, botany, zoology, and vertebrate palaeontology of the north, and the collection, preservation, and display of specimens required for research and public information.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1962 Operations

The natural History Branch sent expeditions to collect fish specimens from the Beaufort Sea and mammal specimens from northern Yukon Territory.

The Human History Branch investigated the archaeology of the Firth River area, northern Yukon Territory and the ethnology of Eskimos in the Bathurst Inlet area, District of Mackenzie.

In addition to investigations carried out by members of the Museum staff, five expeditions were sponsored. Two of these were archaeological and were on Juet Island in Hudson Strait and Bylot Island. The other three studied ethnology, one among the Eskimos of the Belcher Islands, one among the Kutchin Indians in the Yukon Territory, and one among the Hay River Indians.

Plans for 1963

The Natural History Branch will continue study of the fishes off the Arctic coast, and the mammals of the Yukon Territory.

The Human History Branch will investigate archaeological sites in the Yukon Territory, in the Great Slave Lake area, and in the Coronation Gulf region, and will study Eskimo ethnology in the Bathurst Inlet area. A linguistic study of the Athabaskan Indians of the Great Bear Lake region will be carried out under contract..



NATIONAL PARKS BRANCH

Responsibilities      None at present.

Long-term Plans

Select and administer areas which contain representative features worthy of preservation as part of the National Parks System.

Review of 1962 Operations

A field survey was made of regions with potential for national parks in the Mackenzie District and the Yukon Territory by two members of the planning section with a consulting geographer-park planner. This entailed air, ground, and river boat reconnaissance of the valley of the South Nahanni and the east arm of Great Slave Lake - Lockhart River - Artillery Lake area in the Mackenzie District, and the Bennett Lake, Dezadeash Lake, Kusawa Lake, Frances Lake and Donjek regions in the Yukon as well as interviews with administrative personnel at various government centres concerned. The survey confirmed that the Donjek area met the requirements of a national park. Under the National Parks Act the natural resources of the area would be withdrawn from commercial exploitation, and the Council of the Yukon Territory is unwilling to concur in this plan.

Plans for 1963

No new surveys are planned for 1963. The reports on surveys carried out in 1962 will be completed.

NATIONAL HISTORIC SITES DIVISION

Responsibilities      Administration of sites and structures of national historic importance.

Long-term Plans

Study of national history related to the Canadian north in order to select, preserve, and commemorate sites and structures of national historic importance.

Review of 1962 Operations

The reconstruction of the Palace Grand Theatre at Dawson was completed. Cost of the reconstruction for public use as a theatre was approximately \$388,000. The restoration of the Sternwheeler "Keno" was completed at a cost of approximately \$70,000. During the Dawson City Gold Rush Festival the musical "Foxy" was presented in the theatre, and the "Keno" was also used for the entertainment of visitors. Two memorial tablets were unveiled at Dawson to commemorate "Discovery Claim" and "Dawson City".

Plans for 1963

To continue the operation of the Palace Grand Theatre and the Sternwheeler "Keno" in Dawson. To place the Dawson City plaque on a suitable symbolic base.

To arrange for the location at Yellowknife of a tablet to commemorate Canadian bush pilots.

To continue the survey of sites and structures of national historic interest in the Territories.

COUNCIL OF THE NORTHWEST TERRITORIES

Responsibilities To exercise legislative powers comparable to those of a provincial legislature.

Long-term Plans

Enactment of legislation comparable to that of the provinces, and in keeping with changing conditions; gradual evolution toward provincial status with a representative and responsible government.

Review of 1962 Operations

The customary two Sessions of the Council were held, at Ottawa in January and at Cape Dorset in July.

The principal legislation dealt with during the January Session was the Appropriation Ordinance, 1962-63, in which a total of \$7,224,920 was approved. New legislation included a Financial Agreement Ordinance, 1962, to authorize the Commissioner to enter into a financial agreement with the Minister of Finance for the five-year period 1962-67; a new Loan Agreement Ordinance, 1962, and a Low Cost Housing Ordinance. The Illegitimate Children Ordinance was repealed as the legislation was superseded by the Child Welfare Ordinance. Amendments were made to the Fuel Oil Tax Ordinance (increasing the existing rate of taxation on fuel oil other than aviation fuel oil). The Legal Profession Ordinance was amended to exempt legal officers of the Department of Justice from a requirement of obtaining temporary licences when called upon to appear in the Northwest Territories Courts in cases involving the Government of Canada or the Government of the Northwest Territories. The Liquor Ordinance was amended to legalize the home brewing of malt beer as recommended by the Council at the July Session of 1961. The Motor Vehicles Ordinance was amended to provide for increases in the registration fees for motor vehicles as recommended by the Interdepartmental Committee on Federal-Territorial Financial Relations. An amendment was made to the Workmen's Compensation Ordinance requiring employers to report on the new maximum monthly salary for compensation purposes. Other minor amendments included changes to the Northwest Territories Housing Ordinance and the Fur Export Ordinance.

At the July Session, the five following new Ordinances were passed:

- 1) Supplementary Appropriation Ordinance, 1962-63, in which a total of \$172,201 was approved;
- 2) The Power Franchise Enterprise Ordinance for the provision of electric power at Enterprise;
- 3) The Survivorship Ordinance providing legal means to establish survivorship where two or more persons die at approximately the same time;



- 4) The Presumption of Death Ordinance to provide a legal means to establish presumption of death; and
- 5) The Cornea Transplant Ordinance to authorize people while alive to donate their eyes for use, after death, by sightless living persons.

The existing Ordinances which were amended were as follows:

- 1) Bills of Sale Ordinance - to revise the office hours of the registration clerk;
- 2) Co-operative Associations Ordinance - to alter certain administrative arrangements including the appointment of a Supervisor of Co-operative Associations;
- 3) The Disabled Persons Allowance Ordinance - to provide for an increase in the amount paid under the Ordinance in line with legislation passed by the Federal Parliament;
- 4) The Motor Vehicles Ordinance - to give peace officers power to arrest without warrant for certain specific offences;
- 5) The Old Age Assistance and Blind Persons Allowance Ordinance - to provide for an increase in the amounts paid under the Ordinance in line with legislation passed by the Federal Parliament;
- 6) Public Health Ordinance - to provide for the appointment of Public Health Advisory Committees in municipal districts and local improvement districts and to augment the authority of public health officers;
- 7) The Liquor Ordinance - to provide for the issue of guest room licences for motels and similar establishments in the Territories catering to the touring public;
- 8) The Game Ordinance - to clarify the firearms provision pertaining to the hunting of bison and to reduce the alien licence fee from \$200 to \$100 for buffalo hunting; and
- 9) Minor amendments were also passed to the Insane Persons Ordinance, the Financial Agreement Ordinance, and the Judicature Ordinance.

#### Game

Work on caribou conservation continued with the gathering of information on herd sizes, movements, distribution, and human usage. The joint predator control programme with the province of Manitoba was terminated as the population of wolves had been reduced to a low level.

The 1962 fall buffalo hunt was cancelled owing to an outbreak of anthrax among buffalo in the area.

During the second year of sport hunting of big game by residents, eighty-seven licences were issued. The results of the hunt are not yet available.

There was a substantial increase in the numbers of beaver, fisher, lynx and muskrat taken during the 1961-62 season. The take of white fox, marten, mink, weasel, wolf and wolverine declined sharply, while otter and squirrel remained about the same.

The value of furs taken in 1961-62, reflecting price fluctuations, was estimated at \$937,654 compared with \$1,319,748, in 1960-61.

### General

Discussions continued at both Sessions of the Council concerning the political evolution of the Northwest Territories through the establishment of a separate territory of the Mackenzie. At the Winter Session, Council considered and discussed a wide variety of topics including the possible establishment of a Public Utilities Board, financial assistance to students, the administration of justice, saw mill and logging operations at Aklavik, relief programmes, the fur garment industry, discharge of firearms at Fort Smith and other settlements, the possibility of a future national park in the Territories, public opinion in the matter of the establishment of the Mackenzie Territory and the employment of residents by the Administration. During the Summer Session, discussion included such items as a fitness and amateur sport programme for the Territories, mining development, commercial fishing, the consumption of alcohol by indigents, the possibility of establishing a Northwest Territories Labour Code, and a variety of miscellaneous matters relating to the general administration of the Territories.

### Plans for 1963

Among legislation to be introduced at the July session of Council will be a Bill to amend the Municipal District Ordinance to provide for the establishment of different levels of local governments, a Bill respecting a Public Utilities Ordinance to provide for the establishment of a Public Utilities Board and eleven Bills representing both new and amending legislation, recommended by the Commissioners on Uniformity of Legislation of the Canadian Bar Association.

COUNCIL OF THE YUKON TERRITORY

Responsibilities      To exercise legislative powers comparable to those of a provincial legislature.

Long-term Plans

Enactment of legislation comparable to that of the provinces and in keeping with changing conditions; gradual evolution toward provincial status with a representative and responsible government.

Review of 1962 Operations

During the year the Council of the Yukon Territory was called for five sessions; the first session was held from 29th March to 9th May; the second, third and fourth sessions were special sessions called to deal with matters pertaining to the Dawson City Gold Rush Festival and the fifth session was held from 13th of November to 3rd December. During the first session, 27 ordinances were passed, the most important of which were ordinances respecting the Lord's Day Act, Schools, and the Tax on Fuel Oil. The second, third and fourth sessions were special sessions held on July 5th, July 23rd and July 24th. The fifth session dealt with 18 ordinances, the most important being ordinances respecting Fitness and Amateur Sport, Cornea Transplants, and the Prevention of Fire. In addition, provision was made for the appointment of a Labour Provisions Officer.

The Financial Advisory Committee on Finance visited Ottawa in October to confer on matters directly concerning the Territory. This was the first occasion that members of the Council have had the opportunity of holding discussions with Federal Government officials at a location other than in the Territory.

ADMINISTRATION OF THE YUKON TERRITORY

### Responsibilities

To administer the ordinances of the Yukon Territory and carry out the responsibilities of the Department of Northern Affairs and National Resources (except Water Resources).

### Long-term Plans

Evolution towards full provincial status.

### Review of 1962 Operations

### Territorial Secretary

During the year, the office of the Territorial Secretary:

1. Issued 427 licences under the Business Licence Ordinance.
2. Issued 13,341 licences under the Motor Vehicle Ordinance.
3. Recorded from 150-200 Registrations per month under the Conditional Sales Ordinance and the Bills of Sale Ordinance.
4. Recorded an average of 70 Registrations of Births, Deaths and Marriages per month.
5. Issued 160 Boiler Inspection Certificates

The total assessments for 1962-63 amounted to approximately \$5,500,000 with a total tax imposed of approximately \$191,000.

### Education

The enrolment in the schools continued to increase, reaching a total of 2,970 students and 135 full time teachers. The adult night school programme increased in scope and was expanded to include Dawson and Elsa. Plans were being formulated to take over the Old Crow School from the Northwest Territories Educational System.

One of the most important events was the conclusion of an agreement between the Government of the Yukon Territory and the Catholic Episcopal Corporation of Whitehorse whereby responsibility for the administration of separate schools would come under the Department of Education until school districts were established.

In September a Director was appointed to implement the Vocational Training Programme. Planning and programming was to be ready when the Vocational Training Buildings would be available for occupancy in the spring of 1963.

### Territorial Department of Public Works

#### Roads and Streets

Reconstruction of sections of the Whitehorse - Keno, Stewart - Dawson - Boundary Road was carried out at a cost of approximately \$525,000.



### New Buildings Constructed

The total cost of the new secondary school in Whitehorse and the new schools at Porter Creek, Carmacks and Watson Lake amounted to approximately \$1,612,000. In addition, a Vocational Training School, two Teacherages, and a Senior Citizens Home in Whitehorse were started. The approximate cost of this programme is \$1,100,000.

In addition to these major projects numerous smaller projects were undertaken on behalf of the Federal Government including campground and picnic area extension, the construction of petroleum, oil and lubricant buildings, forestry fire look-out towers and cabins, roads to the towers, and the regular repair and maintenance of all Department of Northern Affairs and National Resources buildings outside the Whitehorse area.

### Forestry

The forest fire season was one of the lightest on record with 46 fires burning a total of approximately 19,855 acres. Total fire protection costs were about \$330,000. In October new Territorial Timber Regulations were adopted. A Sawmill Training Course was provided for local operators. A total of approximately 5,000,000 board feed of lumber was cut during the year, much the same as the average over the last ten years.

### Mining

Mining activity increased somewhat over the previous year with the finding of extensive iron ore deposits north of Mayo. On April 1st the new Mining District of Watson Lake - Nahanni, was opened with headquarters at Watson Lake and a resident Mining Recorder.

The Central Office of Records was transferred from Ottawa to Whitehorse. The Prospectors' Assistance Programme was implemented. Mineral claims recorded in the Territory were slightly in excess of 3,000.

Oil and Gas exploration continued in the Southeastern Yukon and in the Eagle Plain area north of Dawson and Mayo. The Yukon Lands Records were transferred from Ottawa to Whitehorse. Modifications embodied in the new Territorial Land Regulations provided for the maximum availability of land to the public with minimum controls for equitable disposition. The issuance of leases, Agreements for Sale and licences did not increase significantly.

### Tourism

In March a Director was appointed to develop and promote the tourist industry in the Territory. A survey of tourist traffic was carried out by the new Department and the results were most encouraging. Financial assistance was made available to local groups. The Dawson City Gold Rush Festival was put on for the first time.

### Municipal

Central Mortgage and Housing Corporation made preliminary recommendations for the planning of the Whitehorse Metropolitan area, the Haines Junction area, and the Watson Lake area. The Lot 19 proposal, forming part of the squatter resettlement programme in the Whitehorse area was refused by the ratepayers of Whitehorse. The Federal and Territorial Government began a programme of moving unoccupied buildings situated on Crown land, as well as buildings whose occupants wished to move, and 62 buildings were removed or demolished by the end of the year. Low Cost Housing Loans were delayed pending the elimination of administrative difficulties.

### Welfare

The Dawson District Welfare Office had its first full year of operation and the Senior Citizens' Home was opened there. The Juvenile Court made greater use of the Welfare Department for court reports and the arrangement of custodial care. The Department assumed responsibility for the Administration of Old Age Assistance and the Blind and Disabled Persons' Allowances, previously performed by the Territorial Secretary's office.

### Regional Library

In April a free public library service was introduced into the Yukon. A Regional Librarian was appointed and five branch libraries were made active members of the Regional Library. Two libraries became Associate Libraries and 10 Deposit Stations were established. During the year, approximately 5,000 books were purchased and distributed throughout the system. It is anticipated, in co-operation with the Department of Education, to initiate a plan for extended library service to rural schools throughout the Territory.

### Liquor

The Territorial Liquor Ordinance was amended to permit licences for cabarets, beer and wine with meals in dining rooms, and entertainment permits. A committee was established to look into all phases of liquor legislation and administration in the Territory.

### Public Health

The Watson Lake Health Centre was expanded into a four-bed Nursing Station. The construction of the Ross River Health Station was commenced. Emergency medical boxes containing First Aid supplies and emergency drugs were distributed at selected points in the Territory. A free cancer diagnosis and treatment service was introduced. A chronic disease register was set up. The administration of medical care for non-Indian indigents and children-in-care and the tuberculosis, mental disease, venereal disease and cancer programmes were transferred from the Department of Welfare to the Northern Health Service. The routine duties of the Public Health authorities increased.

### Game

The number of alien hunters during the open season was 170, which is less than during the previous year. The Predator Control Programme was continued and 65 wolves were taken on poison baits. Patrols were conducted in co-operation with the Yukon Forestry and the Royal Canadian Mounted Police. Outfitters' equipment was inspected and their base camps were visited to ensure adequate facilities.

### Territorial Treasurer

For the fiscal year ending March 31st, 1962, the Government of the Yukon Territory received in Revenue, from all sources:

General	\$2,937,485	
Federal Government Grants	573,826	
Expenditures recovered from the Federal Government	<u>1,527,612</u>	\$5,038,923

For the same period expenditures were:

Operating	\$3,746,375	
Capital	<u>1,860,328</u>	\$5,606,703

A new financial agreement was entered into between the Commissioner and the Government of Canada for the period April 1, 1962, to March 31, 1967. The main changes in policy were in connection with the financing of capital expenditures, the cost of police services, and the provision of water and sewer services for urban areas in the Territory.

### Plans for 1963

The Territorial Department of Public Works construction programme includes the addition of classrooms to existing schools at Porter Creek, Watson Lake, Haines Junctions, Carmacks, Dawson City, Mayo, Teslin and Old Crow. Grader Stations will be built on the Flat Creek - Eagle Plain and Watson Lake - Ross River Roads; the Whitehorse - Keno Road, the Stewart Crossing - Dawson Road, the Dawson - Boundary Road, and the Canol Road will be reconstructed. The approximate cost of the programme is \$1,271,000.

NORTHERN ADMINISTRATION BRANCH

OFFICE OF THE ADMINISTRATOR OF THE ARCTIC

Responsibilities      The administration of the districts of Keewatin and Franklin (except Victoria and Banks Islands) and of Eskimo affairs in Arctic Quebec.

#### Long-term Plans

To decentralize as much responsibility and authority as possible to regional and local field offices; to co-ordinate programmes of education, welfare, and economic development; to carry out and supervise established policies in the field.

#### Review of 1962 Operations

##### Organization

A Regional Headquarters was maintained at Churchill, Manitoba with area offices at Rankin Inlet, Coral Harbour, Eskimo Point, Whale Cove, and Baker Lake. Another Regional Headquarters was maintained at Frobisher Bay with area offices at Cape Dorset, Igloodik, Hall Lake, Pangnirtung, and Pond Inlet. A Regional Headquarters for Arctic Quebec was maintained at Ottawa with area offices at Fort Chimo, Sugluk, Port Harrison, Povungnituk, and Great Whale River.

##### Economy of the District

Permanent wage employment remained fairly constant in most of the district, particularly at the larger centres of Frobisher Bay and Churchill. The same pattern was repeated along the DiW Line. Seasonal employment for Eskimos as stevedores, as members of mining exploration crews, and as workers with government surveying parties, construction teams etc., was at approximately the same level as in 1961.

The one large change in the employment situation resulted from the closing of the North Rankin Nickel Mine which employed from 60 to 80 Eskimos in summer and about 25 in mining and milling operations in the winter. The Department is attempting to provide alternative employment in maintaining essential services in Rankin Inlet and by beginning an experimental trapping project.

The unemployment situation at Rankin Inlet emphasized the need for diversifying the economy especially in the Keewatin Region. The problem goes deeper than the closing of a mine and is in large part a consequence of the long-term failure of the economy of the Keewatin region as a whole. The mine served as a brief palliative in that deteriorating situation. In the long run, the wise organization of renewable resources may provide a way of life for the people, but recovery will be neither quick nor easy.

##### Engineering Services

Crews shipped from Ottawa were engaged in construction in 23 arctic settlements. Crews hired in Winnipeg or elsewhere in Manitoba



performed construction work in seven Keewatin settlements. The major projects undertaken were the take-over of Rankin Nickel Mines facilities to maintain services to the Rankin Inlet residents and departments dependent upon them. The cost of taking over these services was \$275,800 and added a very heavy maintenance burden to the engineering staff. The second major construction area was Frobisher Bay where a large store and marshalling compound was erected. Other construction included a four-classroom school addition with other conversion jobs to old buildings, including buildings belong to the R.C.M. Police and the Post Office Department. A major item requiring careful attention was the airlift of men and materials to Grise Fiord early in the spring for the erection of a school complex, a powerhouse and warehouse, and Eskimo housing units.

Delivery of 11 bulk oil tanks was made at eight settlements for erection in 1963. Ten sets of generators were delivered for installation. Lighting was provided for skating rinks, streets, including new electrical distributing systems. Revisions of plumbing systems were carried out including renovation to 30 Eskimo welfare houses. One hundred and ten low cost Eskimo houses were shipped for eventual erection by the Eskimo people with supervision by construction staff. A great deal of maintenance was carried out on existing departmental buildings. In some areas the work of the construction crews was impeded owing to the non-arrival of materials or short shipments.

#### Property, Building, and Equipment Section

It was decided to have a commercial company handle all aspects of the shipping operation, with the Arctic District Office providing an expeditor and liaison officer to co-ordinate activities between suppliers, the Arctic District Office, and the shipping companies. The total tonnage handled by the company was slightly in excess of 5,000 tons and does not include the thousands of tons of petroleum products which go direct to the ships from the suppliers. While there were some problems, it was shown that a commercial firm could handle the difficult job of northern shipping.

#### Industrial Section

Eskimos participated in catching, processing, and freezing fish for shipment to southern Canada at the following locations: Leaf Bay, Koksoak, and Whale Rivers in the Ungava area (Arctic char and salmon); Richmond Gulf (sea trout and white fish); George River (Arctic char) and Port Burwell (Arctic char and cod). At Frobisher Bay Arctic char and cod were caught and sold locally. Arts and handicrafts projects continued at the following locations: Cape Dorset and Povungnituk (carvings and prints), Great Whale River (carvings, sealskin hats and other handicrafts), Port Harrison (dolls and sealskin toys), Fort Chimo and Port Burwell (sealskin crafts and other handicrafts), Baker Lake (carvings and handicrafts), and Sugluk (carvings and handicrafts).

The canoe building project at Great Whale River produced eight canoes, two of which were sold privately and the remainder made available to the Department.

### Education

The small hostel construction programme for the accommodation of up to eight pupils continued and 17 hostels are now operating in seven communities. Construction began on seven small hostels at Eskimo Point, Pangnirtung and the Belcher Islands. Adult education classes in homemaking, child care, English, sewing, handicrafts, cooking, etc. were conducted in many communities of the Arctic. Instruction was also given by specialists hired under contract for a certain number of hours instruction each week. An orientation course for new teachers was held in August, and teachers' workshops were held at Churchill, Frobisher Bay and Great Whale River to enable teachers to study their various problems and improve teaching methods.

A total of 74 Eskimos received vocational training in the following categories: power plant operation, outboard motor repair and maintenance, carpentry, classroom assistants, sawmill operation, plumbing, nurses aides, hairdressing and clerical. Five Eskimos from the Arctic District attended the Sir John Franklin School at Yellowknife taking a general course in vocational training.

### Welfare Section

Welfare services were maintained but the Rehabilitation Centre at Rankin Inlet ceased to function as a formal organization. The Superintendent of this Centre assumed the duties of area social worker, maintaining counselling services and handicraft projects. The area social worker positions at Baker Lake and Rankin Inlet remained unfilled and both positions were deleted from the establishment.

The Rehabilitation Centre at Frobisher Bay continued to service physically and socially handicapped persons. The programme consisted of case work, counselling, fundamental education, pre-vocational training, and training in the operation of small business enterprises. A number of staff changes created operational problems at the Centre, but the programme was not curtailed. A number of rehabilitants graduated from the Centre and went on to gainful activity.

On April 1, the Arctic District Office accepted responsibility for the repatriation of all Eskimos discharged from southern hospitals. In order to provide this service agents were hired at Roberval, Moose Factory, and Winnipeg and an agreement was made with the Travelers' Aid Society in Montreal and Toronto.

### General

A welfare team was provided for the annual eastern Arctic Medical Patrol on the C.C.G.S. "C.D. Howe". Other medical patrols were made by airlift. All hospitals in southern Canada caring for Eskimo patients were visited at least once during the year by social workers. Ottawa officers made a number of inspection trips to the field and aircraft under continuing charter at Churchill and Frobisher Bay carried out many routine and special trips in connection with the work of the Department.

### Plans for 1963

#### Organization

A certain amount of decentralization will continue to take place with regional and area offices taking on additional duties in keeping with long term plans. In addition, the closing of the Rankin Inlet Mine has posed a most serious threat to the economy of the Keewatin Region. As a result of several conferences of regional and area officers a programme is being implemented to offset the situation along the lines of resource harvesting, handicrafts production, and tourism.

OFFICE OF THE ADMINISTRATOR OF THE MACKENZIE

Responsibilities      General administration of the District of Mackenzie, Banks Island and Victoria Island, and Wood Buffalo National Park.

Long-term Plans

To extend the decentralization of northern administrative affairs to form an administration for a new Territory of Mackenzie.

Review of 1962 Operations

The office of the District Administrator at Fort Smith supervised the three administrative regions with headquarters at Fort Smith, Yellowknife, and Inuvik, and through them area headquarters at Hay River, Tuktoyaktuk, Fort Simpson, Coppermine, Cambridge Bay, and Spence Bay. Area administrators were appointed for the first time at Fort Simpson and Spence Bay and a District Industrial Officer was also appointed. Several resource development projects operated successfully or reached the advanced planning stage.

New schools were operated at Gjoa Haven, Pelly Bay, and Tungsten Mine. An eight-room addition was made to the Fort Smith Federal Day School. School enrolment increased by over three hundred students to 4,170 and nearly 1,000 students were accommodated in hostels. A Separate School District was established at Hay River.

Government fiscal policies introduced late in June resulted in certain restrictions on expenditures, extensions to project completions, and staff reductions. These affected both project and maintenance work undertaken by the District Engineer's office. Territorial projects carried out during the summer included road construction at Enterprise, Fort McPherson, Fort Norman, Fort Good Hope, Fort Providence. Engineering survey work was undertaken at Coppermine, Fort Good Hope and Tuktoyaktuk. Highway operations went smoothly and with few difficulties. Facilities for tourists were completed at several scenic wayside locations. School complexes were completed at Pelly Bay and Gjoa Haven and large projects were started in Yellowknife with an addition to Akaitcho Hall and the construction of a children's receiving home.

Municipal Councils at Hay River and Yellowknife spent much time with community planning and development problems during the year. In Fort Smith and Fort Simpson annual assessments were carried out, and a general assessment of all real property was completed at Inuvik. Community Councils were active at Cambridge Bay and Coppermine and Trappers' Associations were meeting regularly in Wood Buffalo Park and at many other settlements.

During the year Regional Welfare offices were established. New policies and regulations affecting the welfare programme were introduced and much time was spent on putting these into effect and in introducing new routines and procedures. Several large welfare projects continued to be operated successfully particularly in the Inuvik Region. Seven welfare housing units were completed during the year.

#### Plans for 1963

Plans for expanded activities in many areas have been considerably reduced in scope because of Government policies affecting expenditures and staff expansion, and 1963 will largely be a year of consolidation and re-grouping after several years of rapid growth and expansion.

A six-room addition is planned for the Sir John Franklin School at Yellowknife and the need for additional classroom space at Inuvik will be examined closely.

Low-cost housing schemes subsidized by the Federal and Territorial Governments will assume greater importance and there is already a great deal of interest in these programmes.

Very little construction will be undertaken and emphasis will be on maintenance and upkeep of existing works and facilities. Water and sewage schemes for three settlements are expected to be installed during the year.

Industrial Division projects including resource harvesting and co-operative development are expected to play an increasingly important part in the economy of the District.



EDUCATION DIVISION

Responsibilities

To operate a school system for all children in unorganized areas of the Territories. The Territorial Government is responsible for educating all children who are not registered Indians or Eskimos

Long-term Plans

To provide basic elementary and secondary education for all children in the Northwest Territories and Eskimo children in northern Quebec and vocational education to all children and young adults showing interest and aptitude.

Plans are underway to provide school accommodation for all children in these areas by 1968.

The vocational programme at both the high school level and the post high school level is being broadened to meet the particular needs of individuals and work situations in the North. Education beyond the high school level is being encouraged through increasing opportunities for high school graduates to receive scholarships and bursaries.

A gap is developing rapidly between the level of education of children and adults. An adult education programme will be provided to reduce this gap and to help adults adjust to the changes taking place in the northwest Territories.

Review of 1962 Operations

There were 223 classrooms in operation during the 1961-62 school year, of which 29 were in municipal schools and one in a company school. Thirty-three classrooms were added for the 1962-63 year. Large departmental hostels from 100 to 250 beds and smaller hostels of eight beds provided accommodation for 1,256 pupils in all. In September the enrolment in all schools within the Northwest Territories, including federal schools in Arctic Quebec, and a two classroom school at Old Crow in the Yukon Territory was 6,008 pupils, representing a 9.45% increase over 1961. Of these some 1,226 were Indians, and there were 2,397 Eskimos. Vocational educational courses were offered at various locations in the Northwest Territories and throughout southern Canada. They had a registered enrolment of 314 pupils, of whom 96 were Indians and 135 Eskimos. Lectures on the need for adult education have been offered through in-service training courses for teachers. In many communities, classes were held in out-of-hours time by teachers and others interested in helping the adult population. In two communities a start was made on the preparation of material for use in teaching adults basic English, and for the study of the Eskimo language. Plans to provide the opportunity for young Eskimo adults to continue their schooling were expanded.

### Plans for 1963

Ten new classrooms are planned in the Arctic Education District and fifteen classrooms in the Mackenzie Education District.

The vocational education programme will continue to expand and about 400 students will receive training. Some of the students will attend courses at the Sir John Franklin School, Yellowknife, and others will go to courses in southern Canada. In a few communities special courses will be offered to adults. The selection and placement service will also expand its services and develop the system of selecting trainees and placing them in jobs after completing their courses. As the vocational education programme expands and facilities become available, industrial arts, home economics, commercial, and vocational courses will continue to be incorporated into the regular school programme. Training on the job will receive more attention and some of the recommendations of the apprenticeship study, now being carried on, will be considered for implementation in the Northwest Territories.

The Curriculum Section will continue to work on the development of suitable curriculum materials for the north. There will be a continuing study of the 1962 Social Studies guide. A workshop to combine into a curriculum guide for 1964 the many programmes in Language Arts and English for those whose mother tongue is not English, will be held. The new approach to the teaching of mathematics will be introduced into the school system starting at Grade I in the academic year 1963-64. An elementary Science programme, adapted to the northern conditions, will begin. A major consideration will be the production of a unique curriculum for the north's elementary schools and one peculiar to the needs of the northern child. Pilot projects in adult education will be established in a number of communities.

ENGINEERING DIVISION

### Responsibilities

Planning and design of new construction; construction and maintenance of roads, buildings, and utilities; operation of power plants, water and sewerage systems, heating plants, and other electrical and mechanical equipment; provision of engineering assistance for settlement and town planning; site and soil investigations; investigation of northern building problems; provision of engineering assistance to the governments of the Northwest and Yukon Territories.

### Long-term Plans

To meet the requirements of the Department of Northern Affairs and National Resources by providing more economical, aesthetic, and functional structures and by construction of roads to permit easy access to the natural resources in the north. To provide a field engineering staff in the Northwest Territories that can eventually form the basis of a territorial engineering staff.

### Review of 1962 Operations

#### Planning and Design

Community planning received greater emphasis. Settlement plans were prepared in conjunction with studies undertaken for possible water supply and sewage disposal systems. The design of water supply and sewage disposal systems for Povungnituk, Sugluk, Port Harrison, Coppermine, Fort Chimo, Fort Good Hope, Fort Resolution and Tuktoyaktuk was started as well as preliminary studies for proposed systems at Baker Lake, Coral Harbour, Eskimo Point, Whale Cove, Aklavik, Fort Franklin, and Fort Liard. Tenders for the systems for Fort Norman, Fort Providence, and Rae were advertised. In future it will be possible to carry out more advanced planning of major buildings and facilities (water, sewer, electrical power supply, etc.) because of the three-year forecast of expenditures in Construction Votes.

The design of a low-cost three bedroom house was completed with the assistance of the Frobisher Bay Eskimo Co-operative. Fifteen units were purchased by the Co-operative for resale and favourable reports have been received from the Eskimo occupants of the new units.

The programme of providing bulk oil facilities at all northern locations where it is both practical and economical to do so continued, and facilities were designed for seven more locations.

The Hudson's Bay Company acted as retailer for the fuel oil taken from the bulk storage tanks in the settlements selling it throughout the surrounding region at a standard regional price. Savings to the consumer range from 1¢ to 61¢ per gallon.

The sale of electrical power from Departmental generating plants and of bulk oil from Departmental storage tanks began. The number of consumers of electrical power increased as arrangements for distribution, metering and billing were completed.

Improvements and modifications were made in the design of houses, schools, etc., to provide greater comfort and use.

#### Construction and Maintenance - Yukon Territory

The normal maintenance programme on roads and on Departmental buildings was carried out. New construction consisted of seven P.O.L. sheds, two fire towers (complete with living quarters), and ground improvements around several buildings. Several items which were not completed during 1961 were finished.

On the Whitehorse - Keno Road, the Corkery Creek Bridge and the Silver King Bridge were replaced with fill and culverts. The grade and approaches to the Tatchun Creek Bridge were revised and 17 miles of reconstruction between Mile 30 and Mile 50 were completed.

On the Stewart Crossing - Dawson Road all major work was completed with only clean-up and two minor bridge replacements to be carried out next year.

On the Flat Creek - Eagle Plain Road, grading and drainage from Mile 0 to Mile 78 and work on the Klondike River Bridge was completed.

On the Watson Lake - Ross River Road construction was completed from Watson Lake to Mile 68. Grading of the 50 mile section from the Ross River end south towards Watson Lake is substantially complete. Painting remains to be carried out on the Frances River Bridge and clearing from Mile 93 to Mile 130 is proposed as a winter project.

On the Nahanni Pioneer Road, contract work finished on November 2nd. Additional fill and several small changes were made on the Seaplane Base Road at Whitehorse. Access roads to fire towers were completed and grading work on the Canada Tungsten Mine Access Road was finished with the exception of two miles of graveling which will be carried out in 1963. Forty-three miles of location survey were completed on the proposed road from Ross River to Carmacks.

#### Construction and Maintenance - Northwest Territories

Departmental buildings and works were maintained. Buildings and works which were partially completed during 1961 were in most cases



completed. The following buildings were constructed or nearly completed:

- 8 - three-bedroom houses.
- 9 - two-bedroom houses.
- 2 - one-bedroom houses.
- 8 - schools, vocational training shops.
- 9 - hostels, transit centres, children's receiving homes, rehabilitation centres.
- 1 - office or administration building.
- 22 - workshops, powerhouses, warehouses.
- 4 - freezers, refrigerated warehouses, ice houses.
- 30 - homemaking cabins, patrol cabins, implement sheds, sewing centres, P.O.L. sheds.
- 10 - garages.
- 6 - bunkhouses.
- 1 - bathhouse/laundry.
- 5 - bulk oil storage tanks.

The following buildings were partly completed or have been stock-piled (prefabricated) for construction next year:

- 17 - three-bedroom houses.
- 13 - two-bedroom houses.
- 4 - one-bedroom houses.
- 13 - schools, vocational training shops.
- 22 - hostels, transit centres, children's receiving homes, rehabilitation centres.
- 5 - office or administration buildings.
- 7 - workshops, powerhouses, warehouses.
- 6 - freezers, refrigerated warehouses, ice houses.
- 5 - homemaking cabins, patrol cabins, implement sheds, sewing centres, P.O.L. sheds.
- 11 - garages.
- 1 - bathhouse/laundry.
- 9 - bulk oil storage tanks.
- 2 - apartment units or buildings.

Three miles of reconstruction remain to be completed on the 52 mile section of the Mackenzie Highway (N.W.T. 1) between Enterprise and the N.W.T. Border; 23 miles were completed and the balance of the work should be carried out next year.

On the Hay River Highway (N.W.T. 2) grading and graveling was completed from Enterprise to Hay River. Construction of the West Channel Bridge near Hay River is well underway. The approach fills and abutments were completed and the steel super-structure will be erected during the winter.

On the Ingraham Trail (N.W.T. 4) grading, culverts and gravel surfacing from Mile 2 to Mile 4 were completed. Approximately six miles between Mile 0 and Mile 24 were widened and the Yellowknife River Bridge near Mile 5 completed.

In Wood Buffalo Park minor gravelling was carried out on the Fitzgerald - Hay Camp - Rocky Point Road and the Rocky Point - Carlson's Landing - Peace Point Road. On the road from Pine Lake to Peace Point approximately 33 equivalent miles of this 38 mile road were completed. One-half mile of new road was reconstructed east of the old Salt River Bridge. A regravelling job was carried out on the Fort Smith - Pine Lake Road.

Surveys on the Hay River - Pine Point - Fort Smith Road are well advanced. Location surveys were completed between Hay River and Pine Point, a distance of approximately 50 miles. Location surveys and field work for the first 50 miles west of N.W.T. 1 on the Fort Providence - Fort Simpson Road were completed, and plans and profiles are being prepared.

Improvements to local roads were carried out at many of the smaller settlements throughout the Northwest Territories.

The motor vessel "Johnny Berens" completed her first full season of operation at the Mackenzie River Crossing near Fort Providence. The first trip was made on May 29, the final on November 13. A total of 6,236 trips was made during the season, with 3,687 private vehicles, 2,080 commercial vehicles, 146 busses, and 118 miscellaneous vehicles and equipment carried across the river.

#### Mechanical Equipment Operations

Records of equipment and vehicle holdings were extended to include other liquid fuel burning items such as pumps, steam cleaners, and generators. The operational costs of these items are being maintained.

The ten Eskimo students selected to attend the diesel electric generator operators' course, January - April 1962, at the R.C.E.M.E. School, Barrie, Ontario, were of a high calibre and many of them had a reasonable command of English. All students graduated. Since there are enough trained operators at the present time, no course is scheduled for 1963-64.

Specifications were prepared for the larger boats purchased during the year. Inspection and acceptance of these vessels was arranged. Specifications were prepared for approximately \$522,000.00 worth of equipment and vehicles.

The arrangement under which the Inspection Services of the Department of National Defence inspected Branch equipment and vehicles prior to acceptance in 1962-63 proved excellent and will be continued. On a number of the items inspected there were omissions of specified items and substitution of non-acceptable components. It was possible to correct these before the items were accepted, which had not been the case in previous years.

The appointment of a Branch representative as a member of the Government Motor Vehicle Committee proved beneficial, since immediate dis-

cussion relative to Departmental requirements would be held at the meetings thus avoiding long delays occasioned by correspondence.

The standard of equipment and vehicle maintenance improved considerably by the filling of mechanic positions on the establishments of various settlements and by greater care being taken in the implementation of maintenance instructions. The Technical Advisor to the Government Motor Vehicle Committee visited several locations in the Mackenzie and Arctic Districts during 1962 and stated that equipment and vehicle operations were generally satisfactory.

Ninety-five percent of the equipment and vehicle requirements for the Mackenzie Highway System have been purchased and delivered to the site.

#### Frobisher Bay Development

Construction of the new townsite at Frobisher Bay started. The contract was awarded on July 11th for construction of Phase 1 of the programme. The work to be completed under this contract consists of construction of a power and heating plant for Northern Canada Power Commission, hospital for National Health and Welfare, and rock removal from Astro Hill to prepare this site for the foundations of the buildings to be included in Phase 2 of the programme. The plans for Phase 2 are almost complete and tenders for the construction of a sixteen classroom school, 175 bed hostel, project centre, laundry, fire hall, Federal building and apartment buildings should be called early in 1963 by the Department of Public Works.

#### Investigations

Practical investigation in the field of construction, maintenance, and operation in the far north was a continuing programme. Every attempt was made to reduce the costs of these three phases of work. Investigations into different types of materials and equipment resulted in the production of more economical and efficient facilities for use by the Department in the north. Work was carried out with the Central Mortgage and Housing Corporation and the Ontario Research Foundation on a programme to provide a recirculating sewage system for the new Cape Dorset school. The system should be in operation early in 1963 and, if it works satisfactorily, should reduce the quantity of water required for the operation of the school and result in a saving.

#### Plans for 1963

#### Yukon Territory

Construction of the Territorial Gaol at Whitehorse should start. The expected expenditures on this building during the year represent about 60 percent of the complete building construction programme in the Territory. Completion of the Mining Recorder's House, the

Office Building and the Mining Recorder's Assistant's House at Watson Lake is expected. Fire Equipment Remote Cache buildings and improvements to grounds constitute the remainder of the programme.

On the Whitehorse - Keno road, the Stewart Crossing - Mayo Section will be reconstructed to a Trunk Road standard and on the section between Whitehorse and Stewart Crossing, improvements, minor alignment and culvert changes will be made.

On the Stewart Crossing - Dawson Road, the Flat Creek and Clear Creek bridges will be replaced and three multiplate culverts will be installed to replace wooden structures.

The rehabilitation of the Boundary Road from Dawson City to the Alaska Boundary will be completed in the fiscal year of a three-year programme. Bridges at four locations on the Canol Road will be replaced.

On the Watson Lake-Ross River Road, besides completion of the construction already underway, one new contract should be let. On the Nahanni Range Road minor bridges will be constructed, culverts installed, and grading and general cleaning-up carried out. Preliminary surveys for the 140 mile road from Ross River to Carmacks will be completed. Drainage, sub-grade, and asphalt surfacing of Two Mile Hill at Whitehorse will be finished.

#### Northwest Territories

The Phase I Contract at Frobisher Bay will be continued and Phase II begun. Additional schools, hostels, warehouses, workshops, staff accommodation, Eskimo dwellings, power distribution systems, and water and sewer systems will be constructed and items already under construction will be completed.

Final gravel surfacing, completion of grading and culverts, and the completion of the West Channel Bridge at Hay River will finish the reconstruction of the Mackenzie Highway from the Alberta Border to Enterprise and the Hay River Highway from Enterprise to Hay River.

Widening will continue on the initial 24 miles of the Ingraham Trail.

Work will start on the construction of a combined rail-highway bridge on the Hay River - Pine Point - Fort Smith Road and the initial 30 miles along this road will be cleared.

On the Pine Lake - Peace Point - West Boundary Road, the grade from Pine Lake to Peace Point should be completed.

An additional 3" layer of crushed rock wearing surface will be applied to the Fitzgerald - Bell Rock Road.

Construction of trails, service and development roads within Wood Buffalo Park will continue. Local road construction is scheduled for many of the settlements in the Eastern Arctic and the survey of the road from Fort Providence to Fort Simpson should be completed.

INDUSTRIAL DIVISION



Responsibilities      Stimulation of area and community development and industrial growth in the Northwest Territories.

#### Long-term Plans

##### Area Development

To improve the economic status of the local peoples by area planning studies, improved harvesting of food resources, development of cottage-type industries, low-cost housing and co-operative enterprises. This involves assessment of available resources and preparing integrated plans for the development and marketing of these resources.

##### Industrial Promotion

To assess the possibilities of establishing small businesses and industries, including tourist development, and, where feasible, to encourage their development. This involves market research and development in relation to the foods and goods which can be produced for marketing both in the Territories and in the south.

##### Community Planning

To provide centralized planning service to assist communities in the development of their physical and municipal facilities.

#### Review of 1962 Operations

##### Area and Economic Surveys

Surveys were undertaken on the west coast of Ungava Bay, the west coast of Hudson Bay, and the south shore of Amundsen Gulf from Tuktoyaktuk to Pearce Point. The Fort Resolution survey was not undertaken due to a shortage of staff. The three surveys provided a much more accurate assessment of the resources in the respective areas than had been available. Each survey resulted in recommendations designed to improve the exploitation and use of local resources consonant with conservation. The techniques and methods of assessing resources in a quantitative manner was further improved.

##### Community Planning

Urban renewal in Whitehorse continued although some adjustments had to be made in the original planning. The ratepayers of Whitehorse turned down a plebiscite concerning the disposition of a block of land owned by the British Yukon Navigation Company. C.M.H.C. prepared a metropolitan plan for Whitehorse and a study

of the municipal transportation system was completed. Pine Point townsite plans were prepared by Consolidated Mining and Smelting and approved by C.M.H.C. and other interested agencies. The aerial photography programme for northern settlements was completed and community plans for several settlements were prepared. An amended plan for Frobisher Bay was also worked on.

#### Industrial Promotion and Market Research

An investigation and market promotion programme for northern products was carried out in major cities in Canada. A nationwide distribution system for crafts was established and sales were promoted with the production and circulation of a new fine crafts brochure.

#### Arts and Crafts Production

Arts and crafts production continued to grow in relative importance to the Eskimo economy. New craft programmes were set up at Baker Lake, Port Harrison, and Great Whale River. The value of arts and crafts production to the Eskimo economy was estimated at \$5,000.

Over 4,000 sealskins and stone cut prints were produced by the West Baffin Eskimo Co-operative and marketed for a gross value in excess of \$100,000 in Canada and the United States. The Canadian Eskimo Art Committee was very active during the year advising the Co-operative and others.

#### Tourist Development

The total number of tourists was estimated at 2,200 by the end of September, spending about \$850,000. Fishing lodges on Great Slave and Great Bear lakes were booked to capacity all season, and a new tourist enterprise by the Coppermine Eskimo Co-operative got off to a promising start. The outbreak of anthrax forced cancellation of the buffalo hunting season. Traffic increased substantially along the Mackenzie Route, with approximately 1,000 visitors to Yellowknife. Five campgrounds and three picnic sites were in operation along the Mackenzie Route. The information booth run by the Yellowknife Board of Trade went into its second year, and the Northwest Territories Tourist Association opened a booth at the Northwest Territories-Alberta border. A guide training course was held at Snowdrift, with encouraging results. The film, "Pay-Dirt Angling" had wide circulation in the United States and Canada, and a new film, "Seal Hunt", was produced at Whale Cove. Sport hunting seasons were opened on seal at Whale Cove and on beluga at Whale Cove and in the Tuktoyaktuk area. A preliminary angling survey was carried out in the Rankin Inlet - Whale Cove area as the first step in an experimental tourist project to include angling canoe trips as well as spring seal hunting. A set of four tourist pamphlets was published and distributed: "Travel

North", a general pamphlet; "Inn and Igloo", an accommodation guide; "Angling to the Arctic"; and "Hunting the Far North".

### Housing

The Eskimo housing programme continued at a steady pace. The first housing co-operative began at Frobisher Bay and 15 houses were completed. The necessary Territorial legislation was prepared so that housing agencies to administer the low-cost housing schemes could be set up. Liaison with Treasury Board and Indian Affairs was carried out in an endeavour to establish common standards of construction, financing, size, etc. A housing and mortgage administrator was employed in Ottawa to co-ordinate the various housing schemes.

### Technological Development

A 40' steel boat, especially designed for whale hunting and seining was built for use in the Mackenzie Delta.

A seal trap was put into operation at Port Burwell in the fall. This was designed to take the harp seal as they pass Port Burwell on their southern migration in the late fall.

An experimental fish reduction plant, designed by the Fisheries Research Board, began production in the Mackenzie Delta. Owing to mechanical difficulties, the plant did not begin operation until late August. A fairly large sample of high quality dog food was produced.

### Fisheries

Fish production continued to increase with a total catch of 114,000 lbs. of Arctic char, 20,000 lbs. of Atlantic salmon, 30,000 lbs. of whitefish, 10,000 lbs. of cod and 25,000 lbs. of lake trout. The bulk of this fish was marketed in southern Canada and the remainder sold in the north.

### Resource Harvesting

Organized resource harvesting activities resulted in increased catches of sea mammals in a number of areas. At Port Burwell a catch of 1,500 seals was made in the fall. Five hundred seals were taken in an organized hunt in the Herschel Island region. Organized whale hunting on the west coast of Hudson Bay produced a catch of approximately 400 whales.

### Specialty Food Production

Several experiments were undertaken to process seal, whale, buffalo, and fish for sale to northern peoples with the object of finding ways of processing country food so that it would appeal to the people and could be easily transported from one area to another. One of the greatest problems in the north at the present time is that the greatest concentrations of local food resources do not coincide with the population centres. The reactions of northern peoples to these foods was very positive. Plans are being made to establish

small processing plants in several locations.

### Logging Operations

The sawmill at George River continued to operate and approximately 80,000 bd. ft. of lumber was milled. The bulk of this lumber is being used for the construction of a school, a technical officer's house, and a number of houses for the Eskimo residents of the community.

A new sawmill was set up at Fort Chimo and an experimental logging programme carried out. Twenty-seven thousand bd. ft. of lumber was milled.

### Co-operative Development

A total of 14 Eskimo co-operatives are now incorporated in the N.W.T. and Arctic Quebec. A Consumers Co-operative is also operating in Yellowknife. Standard By-Laws for Credit Unions were approved and work towards the formation of Credit Unions was carried out in several areas.

### Plans for 1963

#### Area and Economic Surveys

The staff and funds situation will not allow three separate surveys in 1963. The closing of the Hudson's Bay Company posts at Bathurst Inlet & Read Island in the Coronation Gulf area will doubtless result in population shifts and movements, and difficulties for the Eskimos. Consequently, a large survey of the Coronation Gulf area by two survey officers supported by graduate assistants is being planned, and will embrace both shores of Coronation Gulf from Holman Island to Cambridge Bay.

#### Industrial Promotion and Market Research

Following the success achieved in developing markets for northern foods the demand for other products will be investigated and stimulated with displays at national and international trade shows.

#### Tourist Development

There should be another increase in traffic over the Mackenzie Route, and a rise in the number of visitors to the Mackenzie Delta. Per capita expenditure will probably be lower, because of a larger proportion of visitors travelling by car. A company has been formed to run passenger-boat tours from Hay River to Tuktoyaktuk. The Co-operative at Frobisher Bay proposes to start a tourist operation offering seal hunts, dog team travel, and angling to visitors. Spring seal hunts will be carried out at Whale Cove and the angling survey will be continued in the Rankin Inlet area, with two or

three small groups of anglers taking part. Another guide training course will be held at Great Slave Lake. Plans are underway for a training course for residents of the Northwest Territories interested in the outfitting business. Over 100 prints of "Pay-Dirt Angling" will be in circulation and the film "Seal Hunt" will be distributed widely throughout the United States and Canada.

### Community Planning

Pine Point, Frobisher Bay and to a lesser degree Whitehorse will be the major planning problems during the coming year. Pine Point Mines Ltd. are erecting some 53 buildings, and roads and services must be installed. Problems of land disposal and commercial development will require solutions. Planning Frobisher Bay on a reduced budget will occupy the staff to a greater degree. Evaluation of the aerial photography programme will continue and community layouts will be prepared for selected settlements.

### Housing

The Eskimo housing programme will continue as will the negotiations with Treasury Board and Indian Affairs. A new programme for Eskimo housing with more stress on rental accommodations is the goal. The Territorial housing schemes will become operational and a decided improvement in housing should be forthcoming.

### Harvesting of Natural Resources

A small whale processing plant will be established at the Tha-Anne River to process whale products. An experimental cannery will be set up at Daley Bay to can Arctic char. Experimental work will be carried out at Baillie Island to find ways and means of harvesting and processing Arctic herring. Additional use of local resources will be encouraged and emphasis placed on the production of food for consumption within the Arctic.

### Arts and Crafts

Continued increase in the production of handicrafts and art is expected. New craft enterprises will be established on the west coast of Hudson Bay and in the western Arctic.

NORTHERN WELFARE SERVICE



Responsibilities

To provide welfare services to all residents in the Northwest Territories on behalf of the Federal and Territorial Governments and to Eskimos of Northern Quebec and Churchill, Manitoba; to advise on Yukon welfare matters as required.

Long-term Plans

Northern Welfare Service has three main objectives:

- (1) To introduce in the north suitable programmes of social security, public assistance, and related services for family and child welfare, especially for those classes of individuals who are in need of care and protection.
- (2) To assist in the provision of services designed to prepare people starting from primitive conditions of life for economic and social changes, to foster interim conditions of self-sufficiency pending the advent of more suitable economic conditions, and to promote attitudes of self-reliance.
- (3) To make possible the collaboration of public and private organizations, to encourage the efforts of voluntary agencies, and especially to foster citizen participation and initiative at the local level.

It is proposed to accomplish these objectives by

- (a) locating welfare workers in a number of key areas in each region and placing locally recruited assistants in the larger communities in each area who will be trained in the basic application of welfare policy and operations;
- (b) expanding the rate of construction of welfare housing over the next several years to provide more adequate accommodation for indigent families;
- (c) reorganizing the Welfare Division in Ottawa to attain the most effective distribution of staff to carry out the formulation of policy, the dispensing of technical advice, and the co-ordination of northern welfare activities.

Review of 1962 Operations

Mackenzie District

Inuvik Rehabilitation Centre

Projects sponsored by the Centre continued to provide wage employment or revenue as well as training for gainful activities.

The most successful was once again the logging project. During the year, courses for academic upgrading, wood-working, and welding have been introduced. The varied type of case being referred to the Centre (physical handicap, problem drinker, parolee, emotionally disturbed adolescent, etc.) requires a highly flexible, multi-purpose programme. Shortage of accommodation for families and for further, particularly group, activities restricted normal development as did the lack of a trained group worker.

Outside the Centre, many Eskimos and Indians benefited from the logging project and from the organization provided by Centre facilities for the purchase and resale of handicraft items.

#### Transit Centres

There were transit facilities at Aklavik, Inuvik, and Cambridge Bay for persons coming from or going to hospitals.

#### Children's Receiving Homes

A Children's Receiving Home operated at Fort Smith with a capacity of twelve children. A new Home was constructed at Yellowknife which will accommodate up to twenty children when it is opened early in 1963.

#### Home for the Aged and Infirm

A home to provide care for elderly people unable to look after themselves or without relatives operated in Aklavik.

#### Housing

Provision was made in 1962-63 estimates to construct thirty houses for families who, because of illness or other circumstances, were unable to meet this need through their own resources.

#### Arctic District

##### Frobisher Bay Rehabilitation Centre

The number of Eskimos who used the facilities rose to 130, of whom the number receiving full services was usually in the region of 45. Projects in operation in previous years continued with a trend towards developing some of them into Eskimo-operated private businesses. A small project of gem-grinding from local materials and setting began but it is too soon to make any forecast of its future. The handicrafts programme continued to benefit a large number of residents of Baffin Island and it is hoped that it may develop into an Eskimo-operated co-operative by the end of 1963.

#### Transit Centres

Transit facilities intended primarily to provide temporary accommodation for patients en route to or from hospital were in operation at

Fort Chimo, Frobisher Bay, and Churchill handling approximately 386 transients.

#### Children's Receiving Homes

Receiving Homes operated at Churchill and Frobisher Bay. These provided temporary care for children from broken families, discharged from hospital, or whose parents were unable to care for them because of particular circumstances. They were operated by selected Eskimo couples and supervised by either professional welfare staff or local administrators.

#### Housing

Provision was made in 1962-63 estimates to construct thirty houses for families who, because of illness or other circumstances, were unable to meet this need through their own resources.

#### Services and Developments Common to Both Districts

##### Public Assistance (Relief)

New procedures were introduced on April 1, in the form of a manual. These detailed directions gave welfare officers information on scales of payment, manner of issuing and recording, and a general statement on welfare methods. The use of a new welfare payment form permits the compilation of detailed statistics on relief issues not possible under the previous system and should assure accurate coding of accounts to give a more precise picture of actual relief expenditures.

##### Medical Services

By arrangement between the Departments of National Health and Welfare and Northern Affairs and National Resources, an agreement was reached whereby the welfare service of Northern Affairs would take over, beginning on April 1, the responsibility and the cost of returning patients to their homes in northern Canada after discharge from hospital. This includes Eskimo and others except registered Indians.

##### Linguistic Services

The first phase of the development of a new Eskimo orthography to replace the Eastern Arctic syllabics was completed. The Eskimo language magazine 'Inuktitut' was published quarterly. Eskimo staff made periodic trips to hospitals to provide an interpreting and translating service for Eskimo patients.

Plans for 1963

Corrections

A corrections programme for the Northwest Territories will be developed. A medium security institution at Yellowknife and a minimum security camp at some site in the Mackenzie District will be planned. A probation service will be introduced and the pattern of co-operation with the National Parole Service in the planning and supervision of federal paroles will be continued.

Welfare Housing

The pace of construction of welfare housing will be increased. Forty houses will be erected in each of the two districts.

Q-Book

A book containing information and interesting articles for northern residents and containing about sixty different articles, written in the new Eskimo orthography, Eskimo syllabics, and English will be produced in May or June, and distributed throughout the Eastern Arctic.

Orthography

Implementation of the orthography will be begun. The orthography will be taught to both children and adults as soon as new text books are introduced.

RESOURCES DIVISION

Responsibilities      To administer Crown-owned mineral rights, forests, and lands in the Yukon and Northwest Territories.

Long-term Plans

To promote the optimum development of available resources, developing them as rapidly as possible while protecting the public interest. Specific objectives are:

- (a) to accumulate and correlate information on northern resources and to prepare a total inventory of them as a basis for promoting their development.
- (b) to devise detailed policies for the disposition of oil, gas, placer and hard rock minerals, timber, and land, which will promote active development, and at the same time assure sound management of the resources and protect the public interest.
- (c) to develop an administrative organization that will give efficient service to those taking part in northern resource development.
- (d) to work closely with other agencies engaged in northern development to assist them in planning communities, transportation routes, and other services in relation to existing and potential resource development.

Review of 1962 Operations

Oil and Gas

Land Disposition

The Eagle Plain Reservation was surrendered and converted into 60 Canada Oil and Gas Permits.

A total of 380 Canada Oil and Gas Permits covering 17,421,870 acres were issued; of this 105 permits covering 5,440,574 acres were in the Northwest Territories; 85 permits covering 4,147,762 acres were in the Yukon; 156 permits covering 5,924,356 acres were in the Arctic Islands; and 34 permits covering 1,909,268 acres were in coastal waters. The total acreage under permit and lease on December 31, 1962, was:

Permits

N.W.T. (mainland)	820	38,726,552
Yukon (mainland)	224	10,694,021
Arctic Islands	1,132	52,703,275
Water	292	18,965,328
Total		
	<u>2,458</u>	<u>121,389,176</u>



### Leases

N.W.T. (mainland)	38	191,583.7
	<hr/>	<hr/>
TOTAL	38	191,583.7
	<hr/>	<hr/>

Acreage under permit and lease 121,580,759.7

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Two cash bonus permit sales were held during the year. A total of 32 permits were sold realizing \$703,653.47.

A new method of oil and gas lands disposition was introduced into the Northwest Territories and Yukon by which a work bonus was offered in lieu of cash. Nine blocks covering 66 grid areas were disposed of realizing a work bonus commitment totalling \$2,952,166.21. This sum has to be expended on exploratory work during the first term of the permits in order to be refundable.

### Exploration

#### Mainland

Surface geological surveys were continued at the same rate as in 1961. Approximately 25 geological parties continued an extensive investigation of the stratigraphy and structure with most of the work concentrated in the sedimentary ranges of the Mackenzie and Richardson mountains. Utilization of helicopter and light planes as support aircraft has reached its maximum as all supplies and personnel are transported to and from the field by plane and all surface investigations are carried out by helicopter-borne parties. Approximately a million dollars was spent on this exploratory phase, a major portion of it on helicopter and plane contracts.

Light mobile geophysical equipment was increasingly used to acquire good records under ideal drilling conditions, ten companies adopting it to a greater degree. The cost was comparable to or cheaper than conventional seismic methods as the amount of trails and seismic lines were reduced and the number of personnel cut in half. Stratometer surveys also increased as most of the major oil companies operating on a joint-interest basis were evaluating the structural attitudes underlying the major rivers and smaller lakes.

Two stratigraphic test holes were drilled on Nicholson Peninsula to determine the presence of large structures in the area. Complete geological results are not available but the company was satisfied with the operational aspect of the project.

#### Arctic Islands

The number of surface geological parties was double that of 1961, and at the height of the summer there were 22 parties in the field.

The first well to be drilled in the Canadian Arctic at Winter Harbour on Melville Island was abandoned at 12,543 feet after reaching its stratigraphic objective. Though the well found only a small gas zone at approximately 1,600 feet and was declared as non-commercial, the drilling showed that certain outside operations could continue on a year-round basis. A combine gravity-meter and surface geological crew carried out a gravimetric survey on Melville Island. The results, if favourable, will be applied to select a location for another well.

### Regulations

Regulations pertaining to the disposition of oil and gas under Canada lands remained unchanged. One new order was issued to allow bidding by work bonus in addition to cash bonus.

### Publications

The second comprehensive "Schedule of Wells, 1920-1961" was published listing all the wells and Structure Test Holes drilled to the end of 1961 in the Northwest Territories and Yukon. This schedule also contained all the geological tops and drillstem tests on wells off the confidential list. The "First Statistical Report (1920-1960)" was also printed and distribution will begin in January, 1963. This report contains detailed information on the operations, drilling, and production of oil and gas on Canada lands. Various specialized maps and information circulars were printed for sale and distribution to the oil industry.

### Mining

#### Yukon Territory

The total value of production of gold, silver, lead, copper, zinc, cadmium and coal is estimated at \$13,316,782, an increase of approximately \$500,000 over last year. The value of gold, lead and copper decreased, while the value of silver, cadmium and coal increased. Silver again accounted for over half the value of mineral production. The year was the best, in so far as exploration was concerned, since 1954. What appears to be a very major deposit of iron was staked in the Snake River area. As a result of the high price of silver, there was a great deal of activity in the Mayo Mining District. To provide a more complete service to prospectors operating in the area north of Watson Lake, a new mining district covering the southeast portion of the Yukon and known as the Watson Lake Mining District, with the Mining Recorder's office at Watson Lake, was opened. The large placer operator in the Dawson area accounted for almost all the gold production which totalled 54,086 ounces, valued at \$2,023,357. A total of 3,014 claims were recorded compared with 2,462 in 1961 and 117 quartz mining leases issued, compared with 35.

Claims Recorded

Whitehorse 912	Mayo 1230	Dawson 150	Watson Lake 722
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Northwest Territories

Preliminary figures indicate the value of production to be \$16,783,145 a decrease of approximately \$600,000 from last year. The nickel-copper operation at Rankin Inlet ceased, but 2,145,267 pounds of nickel and 609,448 pounds of copper were shipped valued at \$1,791,298 and \$188,928 respectively. Gold production decreased from 407,474 ounces to 393,433 ounces but the value increased from \$14,449,028 to \$14,718,329 owing to the devaluation of the Canadian dollar. Underground development continued at the Taurcanis gold prospect in the Barren Lands and it was decided to go into production. The Nahanni Mining District covering the southwest part of the Northwest Territories was established, with the Mining Recorder's office at Watson Lake in the Yukon Territory. The tungsten operation in the Flat River area of the Mackenzie Mountain began production and sufficient ore was mined to permit the mill to operate throughout the winter months. Intensive exploration was conducted on the gold prospect in the Contwoyto Lake. A new find in the Itchen Lake area, to the west of Contwoyto Lake was reported.

Extensive work was conducted on the lead-zinc deposit at Admiralty Inlet, 15 miles from Arctic Bay on the north shore of Baffin Island. Also in north Baffin Island a high grade iron deposit was reported. Over 300 claims were staked on the Northwest Territories side of the border covering the extension of the Snake River iron find. A total of 3,990 claims were recorded, over double the number recorded in 1961. Amendments to the Canada Mining Regulations, mainly technical changes, were passed in July. Eighteen leases covering 180 mineral claims were issued.

Claims Recorded

Arctic & Hudson Bay Mining District	205	Mackenzie Mining District	3749	Nahanni Mining District	36
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Lands

Land dispositions reflected increased interest particularly in the Hay River area, where the construction of the Pine Point railway had a decided impact. In the Yukon Territory, the townsites of Watson Lake, Whitehorse, and Porter Creek continued to attract most applicants for land.

The transfer to Whitehorse of the responsibility for implementing the land disposal policy in the Yukon worked out well and while it has not so far been possible to apply this procedure to the Northwest Territories, it is hoped that a similar transfer of administration can be accomplished in the comparatively near future.

The Interdepartmental Committee set up in 1961 to examine and assess the agricultural potential of the Yukon Territory, completed its task, and submitted its findings and recommendations. This report will be the basis of the policy to be developed for the disposal of land particularly suitable for agricultural and market gardening purposes. Some of the numerous requests received for information appear to indicate that a number of cattle ranchers now engaged in the Western Provinces are giving consideration to the possibility of extending their operations into the Territories.

During the year all the remaining Crown owned Canol facilities were disposed of by sale.

#### Land Dispositions - 1962

	<u>Land Sales Completed</u>	<u>Agreements of Sale in force</u>	<u>Leases in force</u>	<u>Total</u>
Yukon Territory	96	159	496	751
Northwest Territories	56	110	383	549
Total	<u>152</u>	<u>269</u>	<u>879</u>	<u>1,300</u>

#### Forest Management and Protection

The number of northern timber operations remained unchanged and there was no significant increase in the quantity of forest products. New Timber Regulations applicable to both the Northwest Territories and Yukon Territory came into effect on October 1, and should stimulate northern timber production because of a lower rate of timber dues. The forest fire hazard in the early spring in the Mackenzie District was slightly higher than in 1961 but from mid-May frequent rainstorms, particularly in the southern half, kept the fire hazard down throughout the summer and on only one day was it extreme. A total of ninety-eight fires were reported, of which nine were false alarms. The eighty-nine fires actually burned 26,324 acres. In the Mackenzie District water bombing was again used on several of the fires to very good effect, although there were some difficulties with the co-ordination of ground crews and the water dropping aircraft, showing the need for better ground-air communication.

The Yukon Territory had only forty-six fires burning a total of 19,855 acres. Thirty-nine of these fires burned 762 acres. The remaining seven fires burned 19,093 acres of muskeg and barren land. A start was made on vocational training courses for fire fighters in the various settlements. In the Yukon the services of the contract helicopter proved invaluable for fire control in inaccessible areas and water bombing with Beaver aircraft was carried out when permitted by terrain and weather conditions. One steel lookout tower was constructed in the Watson Lake area and additional lookouts installed at Tapish, Whitehorse, Stewart River, and Mayo areas. The erection of a steel lookout tower commenced late in the autumn at Dawson. Forest fire suppression activities were controlled from headquarters at Fort Smith and Whitehorse.

The radio communication system in both Territories was thoroughly investigated by a representative of the National Research Council.

#### Timber Production

	<u>Lumber</u> <u>(F.B.M.)</u>	<u>Round Timber</u> <u>(Lin. Feet)</u>	<u>Fuel Woods</u> <u>(Cords)</u>
Yukon Territory	3,821,508	196,724	4,935
Northwest Territories (including Wood Buffalo Park)	3,101,345	81,370	215,040
Total	6,922,853	278,094	219,975

#### Revenue (to March 31, 1962)

##### Timber

Northwest Territories (including Wood Buffalo Park)	\$24,173.71
Yukon Territory	\$26,940.74
Total	<u>\$51,114.45</u>

#### Plans for 1963

##### Oil and Gas

Continued interest is being shown in the Liard River area and Eagle Plain Plateau by various oil operators. A current well, a stepout to the Beaver River gas discovery in British Columbia on the Kotanelee structure, is nearing its objective. If this well is successful it should prove up the largest gas-containing structure in North America. Further drilling will take place in the southern territories with interesting wells scheduled for the Root River and Island River areas. Another one or two wells may commence drilling in the Arctic Islands during 1963. All will be joint-interest wells, that is, several operators will pool their money resources and acreage and select a site on the best structure for testing a particular area. Another significant well will probably be drilled in the Eagle Plain.

An oil sands deposit approximately 60 miles wide and 80 feet thick was discovered on Melville Island. It will be investigated and examined in greater detail this year by taking a light mobile coring rig in by plane to determine by coring and drilling the continuity of the deposit, the thickness of the overburden, and the areal extent of the formation. The sands appear to be better sorted and to contain a lighter gravity oil than the Athabasca tar sands.



Work will continue on the Canada Oil and Gas Land Regulations and new orders may be introduced as the requirements dictate.

"Schedule of Wells No. 3" will be published. This will contain the basic information of all wells and structure test holes drilled to the end of 1962 and complete information on the geology and engineering on wells drilled in 1960.

### Lands

A review will be made of the land disposal policy inaugurated in 1960, in order to make such modifications as are necessary to meet changing conditions. A disposal policy for agricultural land, based on the report and recommendations of the Interdepartmental Committee, will be developed.

### Forests

Publicity to both the general public and to schools will be increased. A start is already being made on plans for bringing more forest fire prevention advertising material to the schools. Fire fighting schools will be continued.

Work will be carried out to improve forestry radio communications. Additional supplies of modern equipment will be purchased replacing obsolete articles of forest fire suppression equipment.

### Mining

#### Yukon Territory

The high level of activity experienced in 1962 gives every indication of continuing. There will be four underground operations and it is reported that a concentrated exploration programme will be undertaken on the new iron deposit in the Snake River area. Construction of a road and airstrip to service this programme will be carried out.

The Prospectors' Assistance Programme which experienced considerable success in 1962 is to be slightly amended in order to improve the quality of the reports and material.

The firm price of silver should stimulate activities in the Mayo Mining District where potential silver deposits are believed to occur.

#### Northwest Territories

The Contwoyto Lake area should receive the most attention from exploration companies and prospectors. There will probably be much staking activity in the Itchen Lake area, located 65 miles west of Contwoyto Lake where a major company recorded approximately 350 claims at the end of the 1962 season. Further work will be



done on the iron ore and lead zinc properties in north Baffin Island.

The producing gold mines will continue at the same rate of production and the Flat River area tungsten deposit, where production began in the fall of 1962, will continue at an increased rate.

NORTHERN CO-ORDINATION AND RESEARCH CENTRE

Responsibilities To sponsor and conduct research on northern subjects, to encourage northern research by non-government agencies, to co-ordinate departmental and inter-departmental research, and to collect and disseminate technical and scientific information on the North.

#### Long-term Plans

To assist in the development of the Canadian north by fostering knowledge of northern subjects through scientific and technical investigations.

To provide laboratory and other facilities in the north for the use of scientists from government departments, universities and elsewhere.

To administer a programme of grants to northern research institutes and northern scientific expeditions.

#### Review of 1962 Operations

##### Northern Affairs Library

Over 5,700 books and periodicals were held in the library. Some 3,000 books were loaned and some 1,670 enquiries received. During the year over 3,300 visits were made to the library, and at least 2,000 telephone calls were handled.

##### Scientific Research Station at Inuvik

Planning for the equipment and facilities to be installed at the new research station at Inuvik continued. Possible research programmes to be carried out at the station were discussed. Tenders for the construction of the station were received.

##### Research Programme

Thirteen research projects were continued or initiated. Eleven of them were in social anthropology. One was in air photograph interpretation, and one in statistical analysis. Scientists were employed under contract, through grants-in-aid, or as seasonal employees from the universities of Montreal, Alberta, McGill, British Columbia, Toronto, Manitoba, McMaster, and from Memorial University and Bryn Mawr College.

The social anthropological projects were:

- (1) A study of the Eskimo community at Wakeham Bay was completed.
- (2) An examination of Eskimo administration in Canada was continued as part of a long-term study of Eskimo administration in Alaska, Canada, and Greenland.

- (3) A social anthropological study of the Eskimos at Resolute Bay was carried out.
- (4) A socio-economic investigation into the living conditions of the Eskimos along the Labrador coast was begun.
- (5) A social anthropological study of Metis and Indian children was carried out at Fort Good Hope.
- (6) A study of the drinking behaviour of the population of Inuvik was begun, with special reference to the effect on the native people.
- (7) A start was made on a programme of research on the demographic, social and economic position of the Metis population in the Northwest Territories.
- (8) A comparative analysis of four Indian communities in the Mackenzie Valley was initiated.
- (9) A sociologist took up residence at Povungnituk, P.Q. for a year's study of the effects of co-operatives and other economic development programmes in northern Quebec and Hudson Strait.
- (10) A study of the adaptation of Eskimos living in southern Canada was begun.
- (11) A study of certain factors affecting the social development of Yellowknife was carried out.

The other two projects were:

- (1) A study of air photography interpretation methods in Labrador-Ungava.
- (2) A statistical analysis of the fur and game records of the Northwest Territories from 1926 to 1961.

#### Grants Programme for Northern Research Institutes and Scientific Expeditions.

A new programme of grants to northern research institutes and northern scientific institutes began. A Grants Committee was appointed to make recommendations to the Minister on the award of grants. Grants totalling \$60,000 were made to the Arctic Institute of North America, the Institute for Northern Studies (University of Saskatchewan), the Centre d'Etudes Nordiques (Université Laval), the Boreal Institute (University of Alberta), the Canadian Research Centre for Anthropology (University of Ottawa), the President's Committee on Arctic and Alpine Research (University of British Columbia), the President's Committee on Arctic Research (University of Manitoba), the Arctic Institute of North America's Devon Island Expedition and the Jacobsen-McGill Expedition to Axel Heiberg Island.

## Reports

Eight reports were issued during the year.

## Plans for 1963

The contract for the construction of the Inuvik Research Station will be let early in the year, a manager will be appointed, and the station should be ready for occupation by December.

The following projects are planned if suitable scientists can be found:

- (1) Continuation of the survey of the Metis population.
- (2) Completion of the studies of co-operatives in northern Quebec, of the living conditions of the Labrador Eskimos, of Eskimo administration, of drinking behaviour in Inuvik, of the four Indian settlements in the Mackenzie, and of Eskimo adaption in southern Canada.
- (3) An economic and social survey of trapping and fishing in the N.W.T.
- (4) A community study of Frobisher Bay.
- (5) A regional survey of the Yukon, including the compilation of a bibliography.
- (6) A study of the relocation of Eskimos to Port Burwell from Fort Chimo and other parts of Ungava Bay.

The grants programme to northern institutes and scientific expeditions will be continued.

NORTHERN CANADA POWER COMMISSION



### Responsibilities

To construct and operate power plants in the Northwest Territories and Yukon to supply industrial, commercial and domestic consumers as authorized by the Governor-in-Council. The plants are self-sustaining, and the power rates provide sufficient revenue to repay capital expenditures over a period of years.

### Long-term Plans

To construct, maintain and expand electrical and utility plants when needed.

### Review of 1962 Operations

#### Northwest Territories

Inuvik - The Inuvik powerhouse equipment consisted of 1860 KW of diesel-electric and 600 KW of steam turbine generating equipment along with 3 - 30,000 lb/hr/steam boilers. At year end there were 380 electrical power connections and 172 connections to the central heating water and sewage systems. Maintenance of mechanical and electrical installations in the various government buildings continued. The plant had a permanent staff of 32 and gross revenue was approximately \$630,000.

Fort McPherson - On behalf of the Department of Northern Affairs and National Resources the Commission operated the power plant, heating system and water and sewage associated with the school and hostel at Fort McPherson; power was also supplied on a commercial basis to several other government establishments and 25 private consumers. The permanent operating staff consisted of 10 persons, all costs were recoverable from the Department of Northern Affairs and National Resources, after crediting billings to other departments and private consumers.

Fort Simpson - The capacity of this plant was increased to 1075 KW by the addition of a 600 KW diesel generating unit: concurrent with this addition, operation of one of the original 75 KW generating sets was discontinued. There were 151 electrical connections in Fort Simpson. The Commission continued to operate and maintain the central heating plant associated with the school and hostels, and the water and sewerage system supplying the community on behalf of the Department of Northern Affairs and National Resources. All costs in connection with these operations were recoverable from the Department of Northern Affairs and National Resources after crediting billings to other departments and private consumers. The power plant had a staff of 13 full-time employees and an average of about 10 employees were engaged in the central heating plant and water and sewerage systems. Gross revenue for the year from the sale of electric power was approximately \$141,000.

Fort Smith - The capacity of this plant was increased to 2300 KW by the addition of a 400 KW slow speed diesel unit, supplying approximately 485 domestic and commercial consumers. The plant had a staff of 13 and gross revenue for the year was approximately \$220,000.

Frobisher Bay - The Commission continued to lease the 1000 KW generating plant and distribution system from the Department of Transport, and operated the two 1000 KW Commission owned diesel-electric units, providing a total capacity of 3000 KW. Construction of a power and central heating plant to supply the existing load and the new townsite development began. The estimated cost of the new plant is \$3,000,000, and completion is scheduled for December 1963. The plant had an operating staff of 10 and gross revenue for the year was approximately \$455,000.

Fort Resolution - This 325 KW plant began operation in February 1961 and 45 customers are now being served. The staff consisted of 3 permanent employees and gross revenue for the year was approximately \$46,000.

Snare River - Snare Rapids - Two hydro-electric plants of 8350 HP and 9200 HP, located 90 miles northwest of Yellowknife and commissioned in 1948 and 1960 respectively supplied the Yellowknife area. Four mines received power directly from the plant and a private utility company purchased power for resale to domestic and commercial users in Yellowknife. The plant had 13 employees and a gross revenue of approximately \$738,000.

#### Yukon Territory

Mayo - A 6000 HP hydro plant supplied the mining industry in the Galena and Keno Hill areas and the communities of Mayo and Keno City. The plant had 8 employees and a gross revenue of approximately \$482,000.

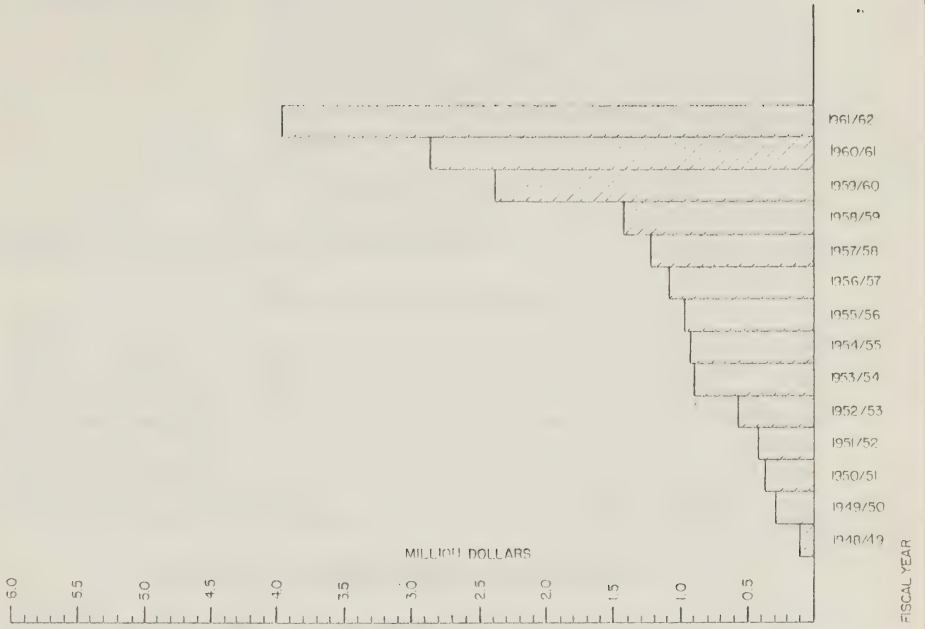
Whitehorse - A 15,000 HP hydro-electric plant, on the Yukon River about two miles upstream from the city, supplied the entire power requirements of the Department of National Defence and a substantial part of the needs of the city of Whitehorse, supplementing the Yukon Hydro Company's own hydro sources. Power for generation of steam in electric boilers for heating purposes was supplied to the Department of National Health and Welfare hospital and the Protestant and Roman Catholic hostels; this power was supplied at rates designed to be competitive with the cost of oil heating and the resulting revenue had a favourable influence on the rate for power supplied directly to the Department of National Defence and for distribution by the Yukon Electrical Company within the city of Whitehorse. The plant had a full-time staff of 7 and a gross revenue of approximately \$491,000.

Plans for 1963

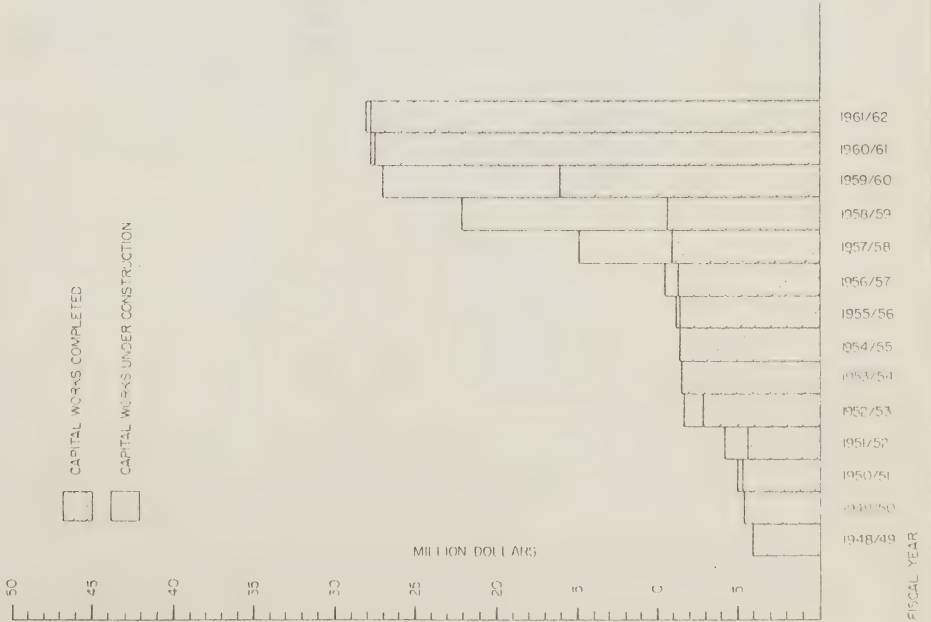
The following projects will be undertaken -

- (a) General maintenance of transmission lines and plants and extension of distribution systems as required to service new construction.
- (b) Continued construction of the plant and power and central heating plant at Frobisher Bay.
- (c) Installation of additional generating capacity at Inuvik.
- (d) Extension of utilidor system at Inuvik to serve the new housing area. This work was deferred from 1962 and expanded.
- (e) Investigation and, subject to Governor-in-Council approval, start on construction of a 25,000 HP hydro-electric development at a site on the Taltson River approximately 35 miles northeast of Fort Smith to supply Pine Point Mines Ltd. and the Fort Smith area.
- (f) Investigation and, subject to Governor-in-Council approval, construction of a transmission line from Yellowknife to Rae, N.W.T. to serve the communities of Rae, Stagg River and Frank Channel, N.W.T.

# GROSS INCOME



# CAPITAL INVESTED



NORTHERN TRANSPORTATION COMPANY LIMITED

Responsibilities

To act as a common carrier of freight on the Mackenzie River System including Lake Athabasca, Great Slave Lake and Great Bear Lake, under the jurisdiction of the Board of Transport Commissioners. To distribute freight by sea from Tuktoyaktuk to DEW Line stations in the Western Canadian Arctic.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1962 Operations

Tonnage handled by the Company was down about 11% from 1961. Tonnage carried on the Mackenzie River System was 113,598 tons; of this 59,389 tons moved into Northern Alberta and Saskatchewan from Waterways, 13,934 tons moved from Alberta into the Northwest Territories, 13,941 tons moved southbound to Waterways, and the balance represented movements within the Northwest Territories, Alberta and Saskatchewan. Along the Arctic coast general cargo and petroleum products were delivered to DEW Line stations.

Plans for 1963

Capital expenditures are estimated at \$101,000 including items carried over. No additional points will be serviced except that, in view of some activity which it appears will continue for a number of years, it has been decided to reinstate one trip a year to service points on Great Bear Lake.



POST OFFICE DEPARTMENT

Responsibilities      Provision of postal services commensurate with the development of Northern Canada.

Long-term Plans

Normal planning to meet requirements.

Review of 1962 Operations

During the year 51,442 pounds of mail were despatched to 8 post offices and 11 non-post offices in the Canadian North via government and private ships, R.C.A.F., R.C.M.P., courtesy flights and regular air stage flights. There was also a considerable volume of mail routed via certain other central points, in addition to Frobisher Bay, N.W.T., and Fort Chimo, P.Q., for which there is no record.

The Christmas Air Drop was provided by the R.C.A.F., and 7,210 pounds were dropped by parachute to 17 settlements.

The cost of conveying mail by air to and from post offices in the Yukon and Northwest Territories for the 1961-62 fiscal year was:

Northwest Territories

Inuvik - Tuktoyaktuk	\$ 1,163.00
Churchill - Baker Lake	45,272.63
Churchill - Coral Harbour	4,912.56
Fort Nelson - Fort Liard	1,123.20
★ Mackenzie River Area	452,612.20
Yellowknife - Discovery	1,360.70
Aklavik - Inuvik	401.38
Montreal - Resolute	<u>100,913.75</u>
Total	607,759.42
Comparative total 1960/1961	<u>586,889.57</u>

Yukon Territory

Dawson - Old Crow	\$ 4,041.40
Dawson - Stewart River	2,160.00
★ Vancouver - Whitehorse	420,011.86
Whitehorse - Dawson	<u>25,920.75</u>
Total	452,134.01
Comparative Total 1960/1961	<u>457,706.84</u>

★ The Mackenzie River Area route shown under Northwest Territories also services three northern Alberta offices and two northern Saskatchewan offices; the cost of this is included in the total of \$607,759.42.

★ The Vancouver - Whitehorse service shown under Yukon Territory also carries mail to and from three landing points in Northern B.C., the cost of this is included in the total of \$452,134.01.

In August 1962 the R.C.A.F. discontinued their operation to Resolute, and the conveyance of mail to that office has since been provided by a commercial carrier as an extension to the Montreal - Frobisher Bay Service.

A post office was opened at Hall Beach, in December 1962, and in order to provide the required service to the new office, Hall Beach became a point of call on the extended service from Frobisher Bay to Resolute.

Sachs Harbour, previously served on a courtesy basis from Inuvik, received service in 1962 by aircraft chartered by the Department of Transport on a cost sharing basis with the Post Office Department.

Approval was given for the establishment of a post office at Whale Cove, N.W.T. As soon as the necessary arrangements have been completed for the opening of the office Whale Cove will be made a point of call on the existing Fort Churchill - Baker Lake air service.

Expenditures for salaries at Post Offices paid from Post Office Revenue for the fiscal year 1961 were:

Northwest Territories

Accounting	-	\$48,696.45
Non-Accounting	-	\$ 5,975.00

Yukon

Accounting	-	\$40,418.40
Non-Accounting	-	\$ 4,073.00

The following table indicates the number of employees engaged by the Post Office Department in Northern Canada and shows the status of the personnel referred to:

	<u>Postmasters</u>		<u>Employees</u>			
	<u>C.S.C.</u>	<u>Dept.</u>	<u>C.S.C.</u>		<u>Dept.</u>	
			<u>F.T.</u>	<u>P.T.</u>	<u>F.T.</u>	<u>P.T.</u>
* Northwest Territories	5	35	7	-	-	4
Yukon	<u>5</u>	<u>15</u>	<u>16</u>	-	-	<u>4</u>
	10	50	23			8
Grand Total -	91					

F.T. means full-time and P.T. means part-time.

★ These figures are for all post offices in the Northwest Territories (Keewatin and Franklin Districts).

The Postmaster General controls the appointment of Postmasters at Revenue Post Offices with an annual revenue up to and including \$3,000.00. When the annual revenue exceeds \$3,000.00, the appointment of the Postmaster and full-time assistants comes under the control of the Civil Service Commission.

Plans for 1963

To maintain adequate service requirements.

DEPARTMENT OF PUBLIC WORKS

Responsibilities

Site investigation, planning and construction of buildings, highways, and bridges for both public use and to meet the requirements of other government departments. Maintenance and improvements to river routes and the provision of wharfs and harbour facilities as well as river bank protection. The planning and installation of sewer, water and power services in northern settlements. The provision of architectural and engineering services to all government services as required. The acquisition, management and control of government properties. The construction and management of federal housing in northern settlements. The development planning of townsites for larger settlements. Assistance in building research when required.

Long-term Plans

To act as architectural and engineering consultants and construction agent for the government in the effective development of northern Canada. To assist in the planning and construction of properly developed centres from which to administer and develop the North. These centres are Whitehorse, Inuvik, Yellowknife, Fort Smith, Hay River and Frobisher Bay. To continue the construction of "year round" highways northward into the Northwest Territories.

To continue to maintain and improve navigable waterways. To establish housing standards for federal employees in northern communities.

Review of 1962 Operations

Planning and construction work was undertaken for twelve departments of the federal government. Work was started on over 100 projects of varying sizes, including a few carried over from 1961. In some cases, bad weather contributed to the late delivery of materials and as a result some projects could not be completed, and these will be carried over into the next construction season.

Tenders were called and work began on Phase I of the new town at Frobisher Bay. A major item in this phase is the construction of a Hospital for the Department of National Health and Welfare. Work is progressing on the plans and specifications for Phase II.

A contract has been awarded for the construction of a Scientific Research Building at Inuvik and work was started on the foundations for 40 houses to be constructed at Inuvik in 1963. A number of small projects were completed at Inuvik during 1962 for the departments of National Health and Welfare, Transport, Northern Affairs and National Resources, and National Defence.



A contract was awarded and construction started on a large Hostel and addition to the school at Fort George. The development programmes at Eskimo Point, Payne Bay and Pangnirtung were completed with the exception of a few minor items. The extensions to the dormitory at Yellowknife and to the Federal School at Fort Smith were both completed. A Health Centre for the Department of National Health and Welfare is under construction at Yellowknife, the tenders have been called for the construction of another Health Centre at Hay River. Plans for large schools at Fort Chimo and Tuktoyaktuk have been completed and for a number of R.C.M.P. projects at various locations. Work is proceeding on plans for an extensive addition to the Sir John Franklin School at Yellowknife. Seismograph vaults for the Department of Mines and Technical Surveys were completed at four locations, and a number of sites for proposed vaults were investigated.

In the Northwest Territories surveys were continued on the Hay River - Pine Point - Fort Smith road as well as easterly on the road from Yellowknife to MacKay Lake. A contract was awarded for the construction of the combined railway - highway bridge across the West Channel leading into Hay River. Reconstruction of the Mackenzie Highway from Hay River to the Alberta boundary continued and was almost completed with the exception of its gravel surface. The construction of the section of the road from Pine Lake to Peace Point in Wood Buffalo National Park was nearly completed.

In the Yukon Territory construction of the Watson Lake - Ross River Road continued. Sixty-nine miles were completed including a 350' bridge across the Frances River at the south end of the project; approximately 45 miles were completed at the Ross River end. Construction of the 80-mile section of the Nahanni Range Road for which the Federal Government was responsible, was completed except for some gravelling operations. Work was completed on the Flat Creek-Eagle Plain road, which runs approximately 78 miles from the Dawson Road to Chapman Lake.

The usual programme of maintenance and improvements to river routes was continued. Two new survey vessels were acquired to facilitate this programme: the MV Hugh A. Young, an 87-foot long, 600 HP twin screw vessel was commissioned on the Mackenzie River, and a fast survey launch was acquired for the Athabasca River. A contract was awarded for the construction of a house barge to accommodate survey crews working on the Athabasca River.

The floating wharves at Fort Good Hope and Fort Norman were completed as were the floating gangplanks at Arctic Red River, Reindeer Station and Wrigley Harbour. Major repairs to the wharf at Fort Resolution were carried out and the wharf at Cambridge Bay was reconstructed. The Federal Government and the Imperial Oil Company Limited shared equally the estimated cost of building a new wharf at Norman Wells, and Imperial Oil did the work. A small wharf was built for the Department of Fisheries' vessels at Hay River.

Investigations to select a site for a new rail-wharf terminal at Hay River, and its overall planning, were continued in anticipation of the completion of the railway to Great Slave Lake, tentatively set for the end of 1966.

#### Plans for 1963

The general construction plans of government departments indicate that activity in the North will continue at much the same level as in 1962 although work may be concentrated in fewer settlements and the accent placed on more permanent facilities. An increasing amount of work will be awarded to general contractors after public tender calls.

For example, tenders will be called, early in the year, for large schools and other buildings at Fort Chimo and Tuktoyaktuk, for a group of 40 houses at Inuvik, and, somewhat later, for an addition to the School at Yellowknife. Preliminary work is being done on plans for a large high school at Inuvik, and for office buildings at Fort Chimo and Fort Simpson. The Department might assume the responsibility for managing federal housing at Hay River, Fort Simpson and Frobisher Bay, because it already fulfills this function at Whitehorse, Inuvik, Yellowknife, Fort Smith, Churchill and Kitimat.

A number of projects will be undertaken for the Royal Canadian Mounted Police in various locations. Several houses will be built for the Department of Transport. Preliminary studies are being prepared for prisons at Whitehorse and Yellowknife for both Territorial governments.

In the Northwest Territories all work on the Mackenzie Highway reconstruction from Hay River to the Alberta boundary will be completed. The Canadian National Railways will fabricate the superstructure for a combined railway-highway bridge across the Hay River on the Pine Point road and, during the winter of 1963-64, the Department will erect it. Surveys will be continued from Providence to Fort Simpson and on the Pine Point - Fort Smith roads.

In the Yukon Territory construction of the Watson Lake - Ross River road will be continued and the final gravelling of the Nahanni Road should be completed. The survey from Ross River to Carmacks will be completed.

The usual programme of maintenance and improvements to river routes will be continued. Surveys will be undertaken at the Sans Sault and Green Islands Rapids to determine if improvements can be made to this section of the Mackenzie River. Tenders for the removal of a rock at the "S" turn on the Slave River will be called.

Small wharves will be built at Fort Albany, Jan Lake, Pelican Narrows, Amisk Lake and Paint Hills. A floating wharf is planned for Rupert House and bank protection will be undertaken at Fort George. Wharf repairs will be done at Fort Simpson.

A marine railway haulout will be built for the Department of Mines and Technical Surveys at Tuktoyaktuk. Site investigation and planning for the rail-wharf terminal at Hay River will be continued.

ROYAL CANADIAN MOUNTED POLICE

Responsibility

The Royal Canadian Mounted Police is the only law enforcement agency in the Yukon and North-west Territories, and has sole responsibility for enforcing federal statutes, territorial ordinances, and the criminal code. In addition, the municipalities of Yellowknife, Hay River, Whitehorse, and Dawson are policed by members of the Force. As well as this basic responsibility for law enforcement, many other functions are performed on behalf of other Federal Government agencies.

Long-term Plans

The trend of eliminating much of the work performed for other government departments continues with the stationing of employees of these departments in the north. This trend, plus the tendency of the natives to leave the land and congregate in the settlements, has resulted in the Force being required to spend far more time policing the settlements and as a result of this and the increasing use of Police Aircraft, extensive dog team patrols are becoming infrequent, but still serve a useful purpose in some areas and under certain circumstances.

Review of 1962 Operations

The following distances were covered by Patrols:

By dog team .....	32,347 miles
By boat .....	71,704 miles
By foot patrols .....	38,328 miles

An additional 1,249,500 miles were covered by aircraft, railway, automobile, truck or snowmobile.

The number of cases handled increased, but again there was a decrease in other duties. Approximately 7,750 offences were investigated, an increase of 1,150 over 1961, and 36,750 other duties were performed, a decrease of 3,250. This is owing to the transfer of such duties as welfare and family allowance issues to the Department of Northern Affairs and National Resources. Total prosecutions amounted to 6,190, an increase of 1,769. Two murders were investigated, the same number as in 1961. Liquor remained the main problem and prosecutions totalled 3,167, of these 1,475 were Indians, 335 Eskimos, and 1,357 whites. Extra personnel were stationed at Dawson during the Festival in July and August. From a police point of view no special problems were encountered.

R.C.M. Police cells continued to operate as inadequate and unsuitable Territorial Gaols. The total number of prisoners handled was:

Yukon .....	2,189
Fort Smith .....	1,028
Western Arctic .....	497
Eastern Arctic .....	129
Central Arctic .....	21
<hr/>	
Total .....	3,864
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This is an increase of 1,087 over the 2,777 prisoners during 1961.

Members continued to render medical assistance and first aid in some isolated areas although to a lesser degree than in previous years. Assistance was given to Indian and Northern Health Services during their semi-annual medical patrols. Continued co-operation with civilian appointed dog officers resulted in strict enforcement of the dog ordinance with a resulting decrease in reports of children being attacked by loose dogs. There were no deaths caused by dogs and only one injury was reported. The incidence of rabies outbreaks throughout the north increased considerably but did not reach serious proportions. There was, however, an outbreak of an unknown disease similar to distemper amongst the dogs at Pangnirtung causing the death of approximately 700 dogs. Vaccination against rabies of all dogs in the north continued with fairly good co-operation from the native owners.

A sub-divisional headquarters was established at Baker Lake allowing better supervision and control of detachments in the Central Arctic. The construction of offices and quarters at Baker Lake was not completed.

A police aircraft was stationed at Whitehorse and now all five Sub-divisions have an aircraft at their disposal. Radio equipment was installed at all detachments in Western Arctic Sub-division and this has greatly enhanced communications between detachments and the Sub-division in that area. Mobile radio sets (detachment to car) were installed at Fort Smith, Rae, and Yellowknife.

A financial agreement was entered into whereby the respective Territorial Governments assumed financial responsibility for police services. This is similar to agreements in the provinces where the Force carried out provincial police duties under contract.



Plans for 1963

A new combination sub-division office, detachment office, and single quarters as well as a separate officers' quarters is to be erected at Baker Lake. Quarters now being used are temporary and inadequate. New detachment and single quarters are under construction at Frobisher Bay; this will be a tremendous asset as the present accommodation is entirely inadequate.

It is expected that Chesterfield Inlet Detachment will be closed with responsibilities being transferred to Rankin Inlet Detachment. The establishment at Rankin Inlet will be increased.

Continued close liaison will be maintained with the departments of Justice and Northern Affairs and National Resources in planning methods and facilities for handling juvenile delinquency as well as the establishment of Territorial Gaols for adult offenders.

DEPARTMENT OF TRANSPORT (AIR)

CIVIL AVIATION BRANCH

Responsibilities      Operation and management of departmental airports, and supervision of several airports" operated by other agencies.

Long-term Plans

To anticipate as far as possible the future needs of civil aviation in the north.

Review of 1962 Operations

Frobisher Bay Airport

There were no major changes in DOT operations. The U.S.A.F. operations were conducted throughout the year in a routine manner and all facilities functioned in a satisfactory manner.

In April arrangements were made to turn over some 13 buildings and a construction camp to the Department of Public Works to be used to accommodate construction personnel engaged in building the new townsite for the Department of Northern Affairs and National Resources.

Banks Island

Development continued on the airstrip at Sachs Harbour being constructed by Edmonton Regional forces with funds provided from the Civil Aviation vote. At the end of the year the length of the airstrip was some 4,800 feet. Some difficulty is being experienced with the melting of ice lenses.

Snag, Y.T. and Aishihik

After obtaining agreement from commercial operators, the airfield maintenance at these airstrips was discontinued in October. The radio ranges at these places remain in operation and will continue until a complete aeradio station is constructed at Burwash, when Snag and Aishihik will be completely closed. It has been estimated that an annual saving of \$162,000 will be realized when these changes are made. It is estimated that these changes will become effective in late 1966.

General

General improvements were made to the aerodromes and airports at Fort Simpson, Inuvik, Norman Wells, Whitehorse, and Yellowknife. These improvements consisted of Air Terminal buildings, runway improvements and paving, medium intensity lighting and Instrument Landing Systems. No new aerodromes were taken over.

Plans for 1963

The Civil Aviation Branch will continue to carry out studies regarding civilian requirements for further flying in the North. Improvements to airstrips and buildings will be made.

CONSTRUCTION BRANCH



Responsibilities      Construction for the Air Services of the  
Department of Transport.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1962 Operations

The Construction Branch carried out:

(a) Airport development and lighting projects:

- (i) at Frobisher, Banks Island, Baker Lake, Cambridge Bay, Norman Wells and Fort Simpson in the Northwest Territories.
- (ii) at Whitehorse in the Yukon Territory.
- (iii) at Fort Nelson and Fort St. John in northern B.C.
- (iv) at Goose Bay in Labrador.

(b) Building and other miscellaneous projects:

- (i) at Clyde River, Frobisher, Baker Lake, Banks Island, Resolute, Eureka, Cambridge Bay, Coppermine, Fort Simpson, Fort Smith, Hay River, Inuvik, Norman Wells, Wrigley, Yellowknife and Alert in the Northwest Territories.
- (ii) at Whitehorse in the Yukon.
- (iii) at Churchill, Fort McMurray, Fort Chimo, Fort St. John, Fort Vermilion, and Port Harrison in the northern parts of the provinces.
- (iv) Goose Bay and Cartwright in Labrador.

Plans for 1963

The Construction Branch will complete or continue work in progress, or begin new work, as follows:

(a) Airport development and lighting:

- (i) at Cambridge Bay, Baker Lake, Banks Island, Frobisher, Inuvik, Norman Wells and Yellowknife in the Northwest Territories.
- (ii) at Watson Lake and Whitehorse in the Yukon Territory.
- (iii) at Fort Chimo, Fort Nelson, Fort St. John, and Lynn Lake in the northern parts of the provinces.
- (iv) at Goose Bay in Labrador.

(b) Building and other miscellaneous projects:

- (i) at Baker Lake, Cambridge Bay, Fort Good Hope, Fort McMurray, Fort Simpson, Fort Smith, Frobisher Bay, Inuvik, Norman Wells, Resolute, Banks Island, Yellowknife and Eskimo Point.
- (ii) at Burwash Landing, Watson Lake and Whitehorse in the Yukon Territory.
- (iii) at Fort Chimo, Fort St. John, Grande Prairie, Churchill, Fort Nelson, and Port Harrison in the Northern parts of the provinces.
- (iv) at Cartwright and Goose Bay in Labrador.

METEOROLOGICAL BRANCH

### Responsibilities

Provision of adequate meteorological facilities in the north. This involves the operation of surface and upper air stations, obtaining meteorological reports from ships in northern waters, and the operation of forecast offices, ice reconnaissance and ice forecasting over ice-infested navigable waters in the north. In addition to 13 upper air stations in the north, the Meteorological Branch shares jointly with the United States Weather Bureau responsibility for operation of the Arctic Meteorological Observatories at Resolute, Alert, Eureka, Isachsen and Mould Bay, N.W.T. and for the development and maintenance of the supporting airstrips at the latter four of these stations.

### Long-term Plans

To provide more complete meteorological and related scientific information in the north, necessitating an expanded network of surface weather observing stations and improved equipment for upper air observations to higher levels; to provide more married living accommodations at several locations in order to encourage more experienced personnel to serve at these stations; to operate seismic vaults for the Department of Mines and Technical Surveys at a few locations, and to undertake a programme of ozone, water vapour, and radiation observations to high levels in the atmosphere at certain stations.

### Review of 1962 Operations

Surface synoptic and/or aviation weather reports were taken, recorded, and transmitted from 56 stations north of latitude 60°. Included in this total is the automatic weather station at Sherwood Head and 16 stations along the DLW Line. At four of these latter stations, Cape Parry, Cambridge Bay, Hall Beach, and Cape Dyer, meteorological technicians were assigned to provide a more complete meteorological observing programme. Three meteorological inspectors were assigned for duties along the DLW Line. At other stations in the north, meteorological inspections were carried out by Regional Meteorological Inspectors. All the upper air stations maintained their full programme of two rawinsonde ascents per day sending instruments aloft to heights averaging over 80,000 ft. to measure and transmit temperature, pressure, and relative humidity data throughout the ascents. These instruments were also tracked in the course of their ascent to determine the upper winds at the various levels. Significant progress has been made in the effort to achieve higher levels in upper air and upper wind observations. Additions to the hydrogen buildings have been constructed to enable inflation and release of larger aerological balloons capable of attaining an altitude of 100,000 ft. Fiber-glass domes have been purchased and are being forwarded to all the upper air stations to house the new

electronic ground equipment which is scheduled for installation within the next few years. Forecasts for the Arctic were provided as routine forecasts but additional forecasts were provided for special Arctic operations.

In continuation of the full responsibility of the Meteorological Branch for ice observing and reconnaissance over ice-infested navigable waters adjacent to Canadian waters, Meteorological Branch ice observers carried out a total of 3183 hours of aerial ice reconnaissance, of which 2263 hours were in Arctic or Sub-Arctic areas. Shipboard ice observers were assigned to Canadian Coast Guard ships for a total of 943 days, of which 566 were on voyages to Arctic or Sub-Arctic destinations.

For long range break-up surveys two series of Round Robin Ice Reconnaissance flights over Arctic and Sub-Arctic areas significant to marine shipping were completed in April and May totalling 100 flying hours.

For medium range and tactical surveys ten Ice Observers were deployed, as required, at Field Ice Reconnaissance Units at Frobisher Bay, Cambridge Bay, Fort Churchill, Resolute, and Fort Smith.

The aircraft used to provide ice reconnaissance for the Hudson Bay Route based at Fort Churchill and Frobisher were equipped with airborne radar.

A summary of flights is as follows:

	<u>FLIGHTS</u>	<u>FLYING HOURS</u>	<u>TACTICAL SUPPORT</u>
1. Queen Elizabeth Islands Base - Resolute.	27	187	22 ships
2. Canadian Western Arctic Base - Cambridge Bay.	46	291	31 ships
3. Hudson Bay and James Bay Base - Fort Churchill.	29	264	5 ships
4. Hudson Strait, Foxe Basin, Davis Strait Base - Frobisher Bay	47	384	27 ships
5. Lake Athabaska and Great Slave Lake Base - Fort Smith	13	43	-
	<u>162</u>	<u>1,169</u>	<u>85 ships</u>

In addition, Ice Observers accompanied routine R.C.A.F. Air Transport Command flights to the Arctic for twelve coverages totalling 537 flying hours.

Ice observers were assigned to seven icebreakers on escort and associated duties in the Eastern and Western Arctic during the summer and fall for 566 days. One hundred and fifty-five short range helicopter flights, totalling 98.5 flying hours, were completed as directed by the Masters of the following departmental ships

C.C.G.S. JOHN A. MACDONALD  
C.C.G.S. LABRADOR  
C.C.G.S. C.D. HOWE  
C.C.G.S. N.B. MCLEAN

C.C.G.S. d'IBERVILLE  
C.C.G.S. WOLFE  
C.C.G.S. CANCELL

Daily shore station ice reports were received from approximately 25 Arctic and Sub-Arctic stations during the shipping season.

Associated Projects:

(a) Ice Thickness Network

Thirty-five stations, of which twenty-three were in the Arctic or Sub-Arctic, reported regular weekly ice thickness observations.

(b) Shipboard Meteorological Programme

Ice Observers, while assigned to icebreakers, completed 2,425 marine weather observations in the Eastern and Western Arctic waters.

(c) Freeze-up and Break-up

The programme initiated in 1956 to obtain freeze-up and break-up data from meteorological stations adjacent to water bodies continued and expanded to include information from the Distant Early Warning System.

(d) Ice Forecasts

The Ice Central, located in Halifax, issued seasonal outlooks, thirty-day forecasts and five-day forecasts for Arctic waters. A Field Ice Forecast Office operated at Frobisher from mid-July to early October, and provided short-range forecasts and advisories for the Hudson Bay route, Foxe Basin and the Eastern Arctic. Similarly an office operated at Cambridge Bay, and for a short period from Resolute, from mid-July until late September to cover the coastal areas of the Central and Western Arctic.



(e) Joint Arctic Weather Stations Programme

At the Joint Arctic Weather Stations Resolute, Mould Bay, Isachsen, Eureka and Alert, the meteorological programme consisted of regular surface synoptic observations eight times per day, two upper air (rawinsonde) and two pilot balloon observations daily. In addition, systematic observations were made of sea ice thickness, snow surface and profile, and tides. Other investigations included measurement of soil temperature in permafrost to a depth of 650 ft. at Resolute; ozone and radiation measurements at Resolute, and Strontium 90 fallout and auroral observations at Alert, Resolute, and Mould Bay.

(f) Joint Arctic Weather Stations Facilities

An accelerated airstrip improvement programme was continued at Alert, Eureka, Isachsen and Mould Bay. While these strips were originally used only during the Spring and Fall airlifts in support of the stations, the one at Alert is now kept open throughout the year. The remaining strips have been developed sufficiently to permit their use during the major part of the summer as well as during the Spring and Fall when the soil is frozen. With the accumulation of fill, these airstrips tend to blow clear of snow in winter, and in any event may be opened during the winter months should necessity arise. Those at Alert and Mould Bay were widened to 200 ft. during 1962. Facilities for handling fuel oil in bulk, including receiving tanks at the airstrips, pipelines from airstrip to station, and storage tanks at station were completed at Alert, Isachsen, and Mould Bay; a pipeline from storage tank farm to parking lot was completed at Resolute for handling fuel oil in bulk; storage tanks were erected at Eureka to receive the station supply of fuel oil in bulk. Improved upper air equipment was in use throughout the year at Alert, Eureka, Isachsen, and Mould Bay. The rehabilitation of Alert was completed, and supplies and materials were forwarded to Eureka for use in the rebuilding programme scheduled for 1963.

(g) Automatic Weather Station

The automatic weather station installed at Sherwood Head, Axel Heiberg Island in 1961 continued to transmit meteorological data including barometric pressure, temperature, wind direction and speed every three hours to Resolute until September 1962, and since that date barometric pressure and temperature only. The data are copied by an automatic receiver at Resolute and are included with other weather reports for onward transmission by teletype circuits.

### Plans for 1963

Delivery of some 6 units of the new GND radiotheodolites is expected. Considerable work will be undertaken at all the upper air stations in removing or planning removal of artificial obstructions to the natural horizon. The new GND equipment will require an unobstructed horizon down to  $4^{\circ}$  elevation if wind observations up to heights of 100,000 ft. are to be realized. Some stations such as Frobisher Bay and Clyde River may have to be relocated to attain this objective.

It is anticipated that the same general ice reconnaissance programme as in 1962 will be carried out with a slight reduction in certain areas due to budgetary considerations.

Construction plans include the rebuilding of Eureka and relocation and rebuilding of the upper air installation at Resolute; a survey of Isachsen and Mound Bay in connection with the relocation of the upper air installation; and the extension of the airstrips at Isachsen and Eureka to 200 ft. x 6,000 ft. to meet RCAF requirements.

It is planned to expand the facilities at the satellite stations to permit their increased use by scientific agencies and exploration parties operating in the Queen Elizabeth Islands.

TELECOMMUNICATIONS BRANCH

Responsibilities      To provide radio aids to air and marine navigation; to provide radio facilities for various scientific organizations and for meteorological observations; to provide other telecommunication facilities as required; to foster and promote the development of public telecommunication services.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1962 Operations

Aklavik

This former R.C.C.S. station was closed and services previously provided were transferred to Inuvik. Commercial traffic at this location was handled by C.N.T.

Baker Lake

A new remote transmitter/non-directional beacon was begun and will be completed in 1963.

Baker Lake and Chesterfield Inlet

Weather service to pilots flying in these areas was improved. Weather observations at Baker Lake were taken over by the Telecommunications and Electronics Branch personnel and the number of observations per day was increased from 8 to 24 at both locations. Coincident with the implementation of this programme, twice hourly weather broadcasts over the Baker Lake and Chesterfield Inlet radiobeacons were begun.

Banks Island (Sachs Harbour)

A remote transmitter building was 75% completed and will be completed in 1963.

Cambridge Bay

A high power non-directional beacon with voice facilities was completed and commissioned. Radio facsimile broadcasts of ice reports were established.

Coral Harbour

The operations building was renovated to accommodate new radio and teletype operational requirements.

### Cape Hopes Advance

The direction finding service was discontinued and replaced by a combined marine/aeradio beacon.

### Churchill

Facilities were commissioned to provide direction radiotelephone connection between ships and points served by commercial telephone companies.

### Dawson

A high power non-directional beacon was installed and commissioned.

### Embarras

The aeradio station was closed and air-ground communications and other services transferred to Fort Chipewyan.

### Eskimo Point

A building for a non-directional beacon was constructed and the radio installation will be completed in 1963.

### Fort Chipewyan

Voice facilities were added to the existing radiobeacon and additional air-ground communications frequencies were commissioned. The station was upgraded to full time operation.

### Fort Providence

This former R.C.C.S. station was closed following the establishment of a C.N.T. office.

### Fort Resolution

A building was constructed for non-directional beacon and transmitter facilities and a radiobeacon was commissioned.

### Fort Simpson

A new radio control building to serve telecommunication and meteorological services was completed.

### Fort Vermilion

An aeronautical radiobeacon was commissioned.

### Frobisher Bay

New 5 Kw transmitter equipment for point-to-point radioteletype and air-ground services was installed at a new transmitter site, and a new marine duplex ship/shore facility was commissioned.

### Great Whale River

A new aeronautical radiobeacon with voice facilities was commissioned to replace the former R.C.A.F. facility. Twice hourly scheduled weather broadcasts were begun on commissioning of this facility.

### Inuvik

A radio teletype circuit to Norman Wells was completed.

### Mayo

A new non-directional beacon with voice facilities was installed and commissioned.

### Nottingham Island

The direction finding service was discontinued and replaced by a marine radio-beacon.

### Resolute

A telephone type communications service, utilizing previously installed single sideband radiotelephone equipment, was introduced. This provided personnel with direct voice communications to a number of out-stations in addition to the original telegraph message service. In connection with DRE's satellite "Alouette" activity, a large volume of operational tracking data between Resolute and Edmonton was handled. Facsimile equipment was installed and ice maps transmitted twice daily for use of vessels in northern waters. Extensions were made to the transmitter and operations buildings.

### Resolution Island

The marine radio station and non-directional beacon was relocated to the USAF base at Cape Warwick. A transponder Marine beacon was installed at the old site to serve vessels entering the Hudson Strait.

### Rankin Inlet

A building for a non-directional beacon was nearly completed.

### Thompson

An aeronautical radiobeacon was commissioned to replace the temporary low power beacon.

### Uranium City

Voice facilities were added to the non-directional radiobeacon and additional air-ground communications frequencies were commissioned.



## Yellowknife

An operational teletype circuit with common carrier facilities was extended north to Yellowknife with drops at Fort Chipewyan, Fort Smith, Fort Resolution and Hay River.

## Development of Public Telecommunications Services

The AGT-CNT Peace River - Hay River high capacity microwave system was inaugurated on April 2. This system when interconnected with an existing CNT landline system, Hay River - Yellowknife, enabled extension of standard commercial telephone and telegraph services to the area.

CBC network service was extended to Yellowknife via Fort Smith and Hay River in April.

Extension of commercial services to Fort Chipewyan in June, was completed by AGT provision of VHF facilities from Fort Smith. It is estimated that service to Uranium City will be provided by 1/2/63.

CNT installed a 50 line automatic telephone exchange at Norman Wells in November and also began handling commercial traffic between Inuvik and Aklavik during the same period by way of a VHF link.

CNT replaced existing exchanges at Yellowknife on June 17, and Hay River on November 11, by a central office dial system and a community dial system respectively. Commercial services were also extended on October 1, to Pine Point and Fort Resolution by way of a CNT VHF link working out of Hay River.

CNT are undertaking the establishment of a tropospheric scatter system ex Hay River to Lady Franklin Point via Snare River and Port Radium now estimated to be in service by December, 1963. Extension of standard commercial services to Cambridge Bay by way of this new system and other existing facilities in the area is planned.

The temporary DOT LF radio channel between Fort Smith and Inuvik made available to CNT in November, will be operated pending establishment by CNT in the Mackenzie Valley of their telecommunication system from Fort Providence to Inuvik via Fort Simpson, Wrigley, Fort Norman, Norman Wells, Fort Good Hope, Fort McPherson and Arctic Red River. This is expected to be ready to handle standard commercial services as well as broadcast and private wire services by October 1, 1964.

A low power broadcasting station was established at Haines Junction, Yukon.

Organizations participating in the Petroleum Industry were authorized to establish thirteen land stations. Companies involved in mining operations were permitted to establish eight land stations. Individuals or companies engaged in other types of operations were permitted to establish a total of thirteen base stations and eleven mobile stations.

The Canadian National Railways were authorized to establish four stations in the Northwest Territories for the provision of a communication service to vehicles of the Haines - Fairbanks Pipeline Company.

### Plans for 1963

The following work is planned:

#### Burwash Landing

Establishment of an Aeradio Station comprising operations building, radio range, transmitter site, powerhouse and staff accommodation, for completion in 1965.

#### Fort Good Hope

Rehabilitation of non-directional beacon and major renovation of the power distribution system, for completion in 1964.

#### Cape Dorset

Establishment of a non-directional beacon.

#### Frobisher

Renovation of a remote receiver building acquired from the USAF. Drainage and improvement of road to outer-marker radio beacon.

#### Inuvik

Establishment of a radio link with Tuktoyaktuk for handling weather and flight information.

#### Nottingham Island

Erection of a storage garage, emergency shelter, operations room, and storehouse.

#### Coral Harbour

Construction of a 60 ft. Bailey Bridge on the route to the transmitter site.

Fort Smith

Renovation of the control cable to the transmitter site.

Yellowknife

Renovation of the control cable to the transmitter site.

Whitehorse

Establishment of an instrument landing system, for completion in 1964.

Inuvik

Installation of an instrument landing system localizer to serve Runway 05 for precision approach to the airport under adverse weather conditions, for completion in 1965.

Hudson Strait

Installation of responder type marine radio beacons for Mansel Island, Cape Acadia, and Ashe Inlet (Big Island) to provide navigational aids to vessels.

DEPARTMENT OF TRANSPORT (MARINE)

MARINE OPERATIONS BRANCH

Responsibilities

Provision of transportation facilities and coordination of cargo and passenger requirements for government agencies; provision of aids to navigation in Hudson Bay, Hudson Strait and Goose Bay; icebreaker assistance wherever and whenever required; arrangements for stevedoring facilities at the Port of Goose Bay.

Long-term Plans

To improve marine work in the north; to meet anticipated additional resupply requirements.

Review of 1962 Operations

The following vessels were engaged in northern transportation:

<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
CCGS "Auk"	Montreal - Baffin Island	413,640
	Lateral movement	2,000
	Churchill - Hudson's Bay Ports	3,358,128
	Northern Ports - Halifax	24,350
CCGS "Camsell"	Tuk-Tuk - Vancouver	4,500
CCGS "C.D. Howe"	Montreal - Eastern Arctic Ports	1,068,635
	Churchill- " " "	1,294,277
	Wayports - Churchill	8,716
	" - Quebec	99,841
	Wayports	25,126
CCGS "d'IBERVILLE"	Montreal - Eastern Arctic Ports	518,673
	Resolute Bay -Eureka	80,640
	Churchill - Eastern Arctic Ports	2,611,977
	Wayports - Quebec	171,686
CCGS "Lider"	Montreal - Foxe Basin	220,500
	Churchill - Hudson's Bay Ports	3,823,884
	Northern Ports - Quebec	6,135
	Port Harrison - Eskimo Point	445,730
	Eskimo Point -Quebec	137,050
CCGS "Gannet"	Montreal - Baffin Island	432,062
	" - Gap Pine	586,369
CCGS "John A. Macdonald"	Wayports	1,328
	Montreal - Eastern Arctic Ports	847,223
	Resolute Bay - Eureka	398,185
	Eureka - Tanquary Fiord	13,600
	Northern Ports - Halifax	90,187



<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
CCGS "Labrador"	Halifax - Eastern Arctic Ports	112,916
	Eastern Arctic Ports - Halifax	5,950
CCGS "Marmot"	Frobisher Bay - Quebec	160,470
	Goose Bay - Frobisher Bay	218,740
CCGS "Mink"	M.C.L. Operations - Port Harrison, Great Whale River, Belcher Island, Povungnituk - Quebec	516,500
CCGS "Montcalm"	Montreal - Eastern Arctic Ports	750,484
	Eastern Arctic Ports - Quebec	63,284
	N. Sydney - Pangnirtung	814,400
	Lateral - DEW Line	134,500
CCGS "N.B. McLean"	Montreal - East Arctic Ports	294,131
	Eastern Arctic Ports - Quebec	18,031
	Montreal - Pond Inlet	82,214
	Montreal - Port Burwell	175
	" - Arctic Bay	266,190
CCGS "Puffin"	Montreal - Mid Canada Line	709,015
	Lateral movement	578,110
	M.C.L. Bulk Oil Re-supply	3,368,000
	M.C.L. sites - Moosonee	108,430
	M.C.L. - Quebec	122,000
	Moosonee - Great Whale River & Fort George	442,000
CCGS "Raven"	Montreal - Mid Canada Line	792,105
	Lateral cargo	334,800
	Churchill - M.C.L. sites	378,150
	Moosonee - Great Whale River	316,006
	Bulk oil resupply	5,624,225
	M.C.L. sites - Montreal	210,002
CCGS "Skua"	Montreal - Gap Pine	284,320
	Gap Pine - Frobisher Bay	140,790
	Lateral - Foxe	558,160
	Saglek - Goose Bay	36,166
	Goose Bay - Gap Pine sites	428,729
	Hall Lake - Montreal	79,750
	Montreal to Eastern Arctic Ports	902,740
	Lateral - Gap Pine	1,359,680

<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
CCGS "Wolfe"	Halifax - Eastern Arctic Ports	1,240,962
	Churchill - " " "	1,625,134
	Wayports - Halifax	3,450
	Sugluk - Foxe Main	24,780
TOTAL - CCGShips		39,789,931
M.V. "Arctic"	Montreal - Foxe sites & East Baffin	27,642,900
S.S. "Canuk Trader"	Montreal to Hudson Strait & Bay Ports	8,383,225
	Northern sites to Montreal	538,023
M.V. "Esquimo"	Montreal - Frobisher Bay	2,211,846
	" - DEW Line sites	8,080,642
	Cape Christian - Montreal	523,524
	Frobisher Bay - Montreal	353,530
M.V. "Farrandoc"	Montreal - Gap Pine sites	1,770,157
	Gap Pine - Montreal	68,535
	Inter-site - Trip No. 1	318,800
	" " - " " 2	2,054,600
S.S. "Federal Pioneer"	Montreal - Resolute Bay	7,742,300
	Resolute Bay - Montreal	1,116,720
M.V. "Fort Albany"	Montreal - Sugluk - Baker Lake	352,813
	Baker Lake - Montreal	43,110
	Montreal - Baker Lake	889,270
M.V. "J. Edward Simard"	Montreal - Resolute Bay	1,203,416
	Churchill - M.C.L. sites	14,926,434
	General cargo	1,360
S.S. "Manchester Explorer"	Montreal - Goose Bay	489,194
	" " "	112,765
	Fort Chimo - Montreal	293,870
M.V. "Meridan"	Montreal - Fort Chimo	771,485
	Montreal - Hudson Bay Ports	
	Hudson Bay Ports - Montreal	13,555
M.V. "Mayfall"	Montreal - Pangnirtung	710,024
S.S. "Perth"	Montreal - Cornerbrook	8,260
M.V. "O.K. Service X"	Montreal - Payne Bay	364,794
	" - Povungnituk, Port Harrison & Great Whale River	258,130
	Povungnituk - Port Harrison - Montreal	12,220

<u>Vessel</u>	<u>Voyage</u>	<u>Cargo in lbs.</u>
M.V. "O.K. Service XI"	Montreal - Goose Bay	936,401
	" - Ungava Ports	679,964
	Payne Bay - George River - Montreal	32,480
S.S. "Ramillies"	Montreal - Frobisher Bay	2,256,000
M.V. "Ste. Foy"	Pond Inlet - Montreal	50,186
	Clyde River - Montreal	91,237
	Montreal - Pond Inlet	621,944
	Montreal - Clyde River	478,400
M.V. "Sir John Crosbie"	Montreal - Goose Bay	24,810
	Montreal - Baffin Ports	1,420,000
	Montreal - M.C.L. Ports	1,624,000
	Broughton - Clyde - Montreal	85,884
	Montreal - Thule	3,428,829
	Great Whale River - Montreal	248,150
M.V. "Swivel"	Montreal - Frobisher Bay	41,416
M.V. "Theron"	Montreal - various	471,857
M.V. "Vega"	Montreal to Arctic Ports	162,655
	Great Whale River - Montreal	3,780
	Montreal - Frobisher Bay	1,082,000
S.S. "Woldingham Hill"	Seven Island - Frobisher Bay	132,000
	Montreal - Frobisher Bay	4,616,000
M.V. "Woodcock"	Montreal - Frobisher Bay	350
	Frobisher Bay - Montreal	86,775
M.V. "Yorkwood"	Rankin Inlet - Churchill	42,500
	Montreal - Rankin Inlet	8,058
	Churchill - Rankin Inlet	24,347
M.V. "Dorsetbrook"	Cornerbrook - Frobisher Bay	3,294,640
M.V. "Pierre Radisson"	Montreal - Frobisher Bay	660,000
M.V. "East Star"	Montreal - Frobisher Bay	542,000
M.V. "Makaweli"	Montreal - Frobisher Bay	6,236,000
	Hudson Bay - Eastern & Western Arctic Ports	6,500,000
	Various - Western Arctic Ports	22,400,000
	TOTAL - Charter Ships	<u>139,538,165</u>

<u>SUMMARY</u>	- CCGShips	39,789,931
	- Charter Ships	139,538,165
		<hr/>
		179,328,096
		<hr/>

A cargo was again delivered to Thule, Greenland, for the Canadian Army, Department of Transport, and other agencies. The Weather Stations at Resolute, Mould Bay and Isachsen were serviced by convoy to Resolute Bay, and by the CCGS "John A. Macdonald" and CCGS "d'Iberville" to Eureka. Direction finding stations were calibrated. The CCGS "Labrador" assisted in the oceanographic survey of Smith Sound, Baffin Bay and Davis Strait. Commercial shipping to Churchill was assisted by ice breakers of the Fleet. Lighthouse and navigational aids were examined and serviced in Hudson's Bay and Strait. The CCGS "John A. Macdonald" reached Tanquary Fiord to land equipment and building supplies in addition to carrying out probes in areas where no hydrographic soundings had ever been taken.

In addition to the total tonnage transported into and out of the Arctic, assistance was also given in the movement of 60,000 tons of bulk oil shipped to Frobisher Bay during the past season. Stevedoring operations at Goose Bay handled 25,000 net tons of cargo.

Plans for 1963

Similar to 1962.

AIDS TO NAVIGATION DIVISION

Responsibilities Establishment and maintenance of marine aids to navigation in the Athabasca-Mackenzie water route and in the Western Arctic, Hudson Strait, Hudson Bay, and Frobisher Bay areas which are being expanded to meet the requirements of shipping.

#### Long-term Plans

Maintenance, operation, and expansion of marine aids to keep pace with expanding shipping requirements. Continuous participation in the Inter-departmental Engineering Committee co-ordinating the activities of government departments in relation to the Athabasca-Mackenzie water route.

#### Review of 1962 Operations

In the Western Arctic the system of aids was maintained and improved, and buoys were placed in the Cambridge Bay and Simpson Strait areas. Two radar reflector towers were installed in Spence Bay, one at St. Roch Basin and one at Shepherd Bay. Range radar reflector towers were placed in Cambridge Bay and radar reflector towers in the Simpson Channel, formerly constructed of wood, were replaced by aluminum towers.

In the Hudson Strait area, new radio beacons were installed at Cape Hopes Advance, Nottingham Island, Cape Warwick, and on the southern end of Resolution Island (transponder). A new radio beacon was also installed at Eskimo Point, but will not be commissioned until 1963. All existing lights and radio beacons were maintained in operation in the Hudson Strait area. A reconnaissance survey was made on Grappling Island (Hamilton Inlet) to permit construction next year of a responder radio beacon.

Improvements were made in the Churchill Harbour range lights and one additional lighted buoy was added. A special high intensity automatic light was purchased and is ready for installation on Resolution Island at the eastern entrance to Hudson Strait.

The four working parties continued their activities in the Athabasca-Mackenzie water route from Waterways to Tuktoyaktuk. New lights were installed at Simpson Island, Ptarmigan Point, and Res-Delta. Aluminium range light towers were erected on Mills Lake and 140 new day beacons were placed between Wrigley Harbour and Norman Wells. Tests of a new type of fast water buoy were conducted in the Providence Rapids. This buoy had been built following model studies at the National Research Council and further development is continuing. There were 5 patrols of the aids on the Mackenzie River between Wrigley Harbour and Norman Wells to replace buoys off position and to adjust them for the changing level of the river. New aluminum

range light towers were erected at Tuktoyaktuk. All of the existing aids were maintained throughout this system and improvements were made in many of them by the use of fluorescent paint and retro-reflective materials. Particular emphasis was given to the Slave River.

#### Plans for 1963

In Hudson Straits a considerable improvement in aids to navigation is planned through the organization of a special working party. The new high intensity light installation at Resolution Island will be made as well as aluminum radar reflector towers, including lights at Cape Acadia and Mansel Island. An aluminum tower with light will be installed at Goodwin Island, and 4 additional buoys at Churchill.

In Frobisher Bay lights are planned at Cape Vanderbilt, Scalene Island, Benoe Point, and Montcalm Point.

A radio beacon will be installed at Grappling Island at the approaches to Hamilton Inlet, for the Goose Bay trade.

In the Athabasca-Mackenzie water route one extra working party will improve conditions between Fort Good Hope and Inuvik. A new vessel will be delivered in July. Four additional lighted buoys will be placed, two at Res-Delta, one on Beaver Lake and one on Mills Lake. A number of aluminum towers with range lights will be placed between Wrigley Harbour and below Fort Good Hope. Additional buoys will be placed in the San Sault Rapids and the Tununik area. Generally, all aids previously established will be continued in operation and the working parties including the "CAMSELL" will continue their close liaison with shippers and establish and move minor aids as they are needed.



4

UNEMPLOYMENT INSURANCE COMMISSION

Responsibilities      Administration of the Unemployment Insurance Act, including operation of an employment service through the Commission's local office at Whitehorse, Yukon Territory.

Long-term Plans

The study of the extension of unemployment insurance to Eskimos engaged in wage employment.

Review of 1962 Operations

Through the Whitehorse Office, 2,057 placements were made. Of these 1,870 were of workers within the area and 187 workers transferred from other areas.

A temporary National Employment Office was opened in Dawson from June 15, to July 30, to assist employers during the area's "Gold Rush Festival". This office completed slightly more than 100 placements.

The Whitehorse Office handled 2,406 claims for unemployment insurance benefit, with the amount of benefit paid totalling \$382,043. On behalf of the Commission, the agent who served in Dawson completed 118 benefit claims. (The Dawson claims' total is included in the Whitehorse Office claims and benefit paid totals.) The agent at Mayo completed 17 claims.

In the Northwest Territories, the Commission's Yellowknife agency was discontinued as of August 7. Up to that date, the agent had completed a total of 13 claims for benefit. The Fort Smith agent completed 86 claims. A Hay River agency was opened in February, and completed 49 claims during the remainder of the year. The agent at Inuvik completed 22 claims up to September when he resigned. His successor was not appointed until late in December.

Plans for 1963

Normal operation of the current employment and unemployment insurance services.

TREASURY OFFICE

NORTHERN AFFAIRS AND NATIONAL RESOURCES

Revenues and Expenditures in the Northwest Territories and the Yukon Territory

Fiscal Year 1961-62

<u>Department</u>	<u>Northwest Territories</u>		<u>Yukon Territory</u>	
	<u>Revenues</u>	<u>Expenditures</u>	<u>Revenues</u>	<u>Expenditures</u>
Agriculture	1,644.16	67,122.37	7,323.19	140,338.69
Chief Electoral Officer	-	3,148.00	12.00	23,011.00
Citizenship & Immigration	-	925.00	-	17,156.11
Indian Affairs	-	695,297.99	-	652,501.22
Finance	-	89,300.03	-	2,414,047.67
Fisheries	11,275.88	192,739.38	11,185.16	32,885.78
Justice	10,035.24	197,750.22	17,642.51	167,520.99
Labour	-	27,771.97	-	37,407.00
Mines and Technical Surveys	900.10	261,268.71	1,810.80	185,232.58
National Defence	-	2,667,828.00	-	5,600,040.00
National Health and Welfare	395,220.62	4,932,684.17	742,318.19	2,037,027.48
National Revenue	-	-	3,348,904.92	188,361.44
Northern Affairs and National Resources	2,912,598.38	14,336,000.00	613,010.71	7,892,000.00
Northern Canada Power Commission	2,353,944.00	1,576,940.00	1,087,658.00	190,948.00
Post Office	117,959.48	731,362.78	152,122.08	627,875.13
Public Printing & Stationery	-	-	-	315.25
Public Works	391,672.00	1,043,272.00	143,069.00	556,826.00
Royal Canadian Mounted Police	145,871.40	1,714,117.59	39,162.32	521,616.03
Soldier Settlement and Veterans' Land Act	-	5,000.00	-	10,000.00



<u>Department</u>	<u>Northwest Territories</u>		<u>Yukon Territory</u>	
	<u>Revenues</u>	<u>Expenditures</u>	<u>Revenues</u>	<u>Expenditures</u>
Trade and Commerce	1,712.55	5,357.13	2,431.65	11,664.20
Transport	586,917.18	10,585,073.41	123,701.79	1,785,622.47
Unemployment Insurance Commission	-	-	50.00	54,156.68
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	6,929,750.99	39,132,958.75	6,290,402.32	23,155,553.72
	<hr/>	<hr/>	<hr/>	<hr/>

★Estimated

GOVERNMENT EMPLOYEES IN THE NORTHWEST TERRITORIES

D E P A R T M E N T O R A G E N C Y	N U M B E R O F E M P L O Y E E S			T O T A L
	Full Time	Seas- onal	Part Time	
Agriculture	19	12	16	47
Air Transport Board	-	-	-	-
Cdn. Broadcasting Corp.	25	-	9	34
Central Mortgage & Housing	-	-	-	-
<u>Citizenship &amp; Immigration -</u>				
Immigration	1	-	-	1
Indian Affairs	57	-	-	57
Total	58	-	-	58
Crown Assets Disp. Corp.	-	3	-	3
Dominion Bureau of Statistics	-	-	-	-
Eldorado Mining	2	-	2	4
External Affairs	-	-	-	-
<u>Fisheries -</u>				
Conservation, Development & Inspection Services	15	4	4	23
Fisheries Research Board	2	29	-	31
Total	17	33	4	54
Forestry	4	3	1	8
Justice	13	-	-	13
Labour	-	-	-	-
<u>Mines and Technical Surveys -</u>				
Dominion Observatories	6	16	3	25
Geographical Branch	-	19	-	19
Geological Survey	6	93	6	105
Mines Branch	-	-	-	-
Polar Continental Shelf Project	1	70	-	71
Surveys and Mapping Branch	-	93	40	133
Interdept. Cttee. on Air Surveys	-	-	-	-
Marine Sciences	-	185	-	185
Total	13	476	49	538
<u>National Defence -</u>				
Navy	142	9	-	151
Army	1016	228	-	1244
<u>Air Force -</u>				
Service	243	13	-	356
Civilian	93	2	42	137
Defence Research Board	6	-	2	8
Total	1600	252	44	1896
National Film Board	-	-	-	-
<u>National Health and Welfare -</u>				
Health	279	-	138	417
Welfare	-	-	-	-
Total	279	-	138	417

AND THE YUKON TERRITORY

LOCATION OF FULL-TIME EMPLOYEES

Q.E. Isl.	<u>Northwest Territories</u>		Mack- enzie	Yukon Terr.	TOTAL	REMARKS
	<u>Rest of Frankl.</u>	<u>Kee- watin</u>				
-	-	-	7	12	19	
-	-	-	-	-	-	
-	3	-	14	8	25	
-	-	-	-	-	-	
-	-	-	-	1	1	
-	-	-	20	27	57	
-	-	-	20	38	58	
-	-	-	-	-	-	
-	-	-	-	-	-	
-	-	-	2	-	2	
-	-	-	-	-	-	
-	-	-	13	2	15	
-	-	-	2	-	2	
-	-	-	15	2	17	
-	-	-	2	2	4	
-	-	-	5	8	13	
-	-	-	-	-	-	
5	-	1	-	-	6	
-	-	-	-	-	-	
-	-	-	3	3	6	
-	-	-	-	-	-	
1	-	-	-	-	1	
-	-	-	-	-	-	
-	-	-	-	-	-	Work done under contract
-	-	-	-	-	-	Under contract
6	-	1	3	3	13	
21	14	-	107	-	142	
-	-	-	-	1016	1016	
58	15	-	5	265	343	
11	-	-	-	82	93	
4	1	1	-	-	6	
94	30	1	112	1363	1600	
-	-	-	-	-	-	
-	30	8	125	116	279	
-	-	-	-	-	-	
-	30	8	125	116	279	

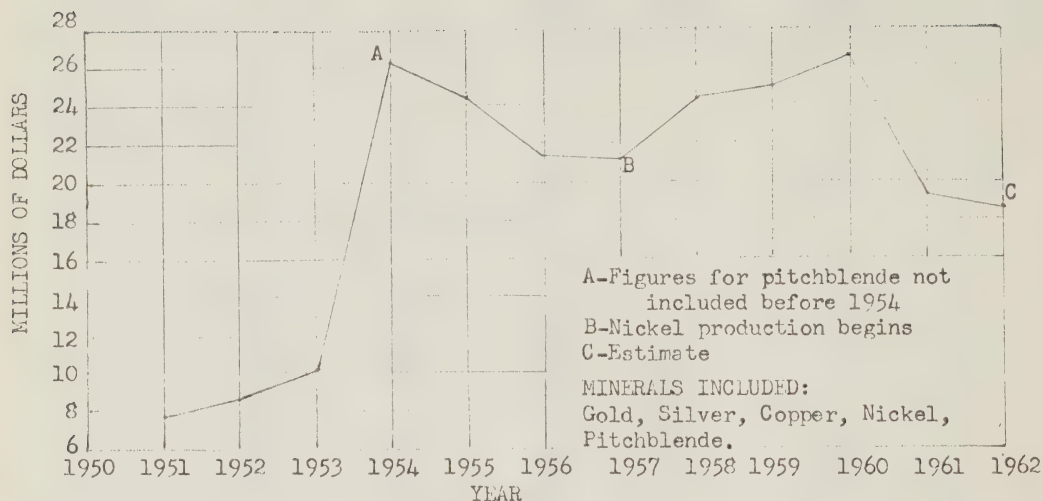


D E P A R T M E N T O R A G E N C Y	N U M B E R O F E M P L O Y E E S			T O T A L
	Full Time	Seas- onal	Part Time	
National Research Council	1	3	1	5
National Revenue -				
Customs and Excise	14	-	1	15
Taxation	<u>6</u>	<u>-</u>	<u>-</u>	<u>6</u>
Total	<u>20</u>	<u>-</u>	<u>1</u>	<u>21</u>
Northern Affairs and National Resources -				
Canadian Wildlife Service	4	-	3	7
National Museum	-	6	4	10
Northern Administration Branch -				
Administrator of the Arctic	181	-	-	181
Administrator of the Mackenzie	532	18	7	557
Administrator of the Yukon	<u>49</u>	<u>12</u>	<u>4</u>	<u>65</u>
Total for N.A. Branch	<u>762</u>	<u>30</u>	<u>11</u>	<u>803</u>
Northern Co-ordination and Research Centre	<u>2</u>	<u>13</u>	<u>-</u>	<u>15</u>
Total for N.A.N.R.	<u>768</u>	<u>49</u>	<u>18</u>	<u>835</u>
Northern Canada Power Commission	119	42	-	161
Northern Transportation Company	3	12	45	60
Post Office -				
Under C.S.C.	12	-	-	12
Under P.O.D.	<u>21</u>	<u>-</u>	<u>58</u>	<u>79</u>
Total	<u>33</u>	<u>-</u>	<u>58</u>	<u>91</u>
Public Works	34	284	58	376
R.C.M. Police	190	1	-	191
Transport -				
Air Services	572	57	-	629
Marine Services	-	1268	-	1268
Total	<u>572</u>	<u>1325</u>	<u>-</u>	<u>1897</u>
Unemployment Insurance Commission	8	2	5	15
Grand total 1962	<u>3778</u>	<u>2497</u>	<u>449</u>	<u>6724</u>

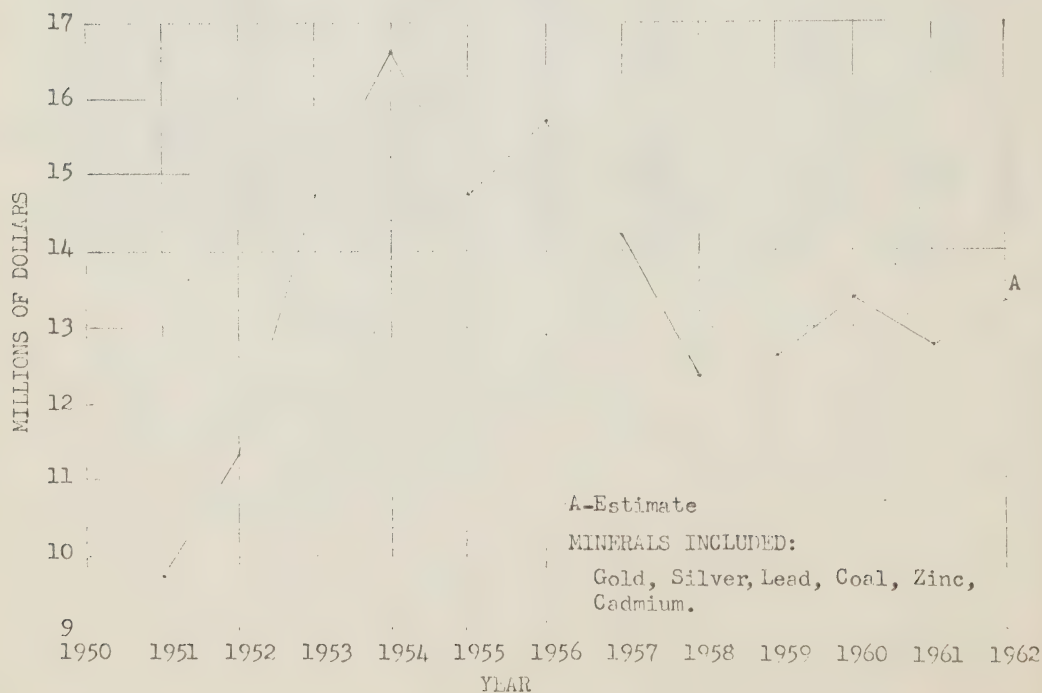
LOCATION OF FULL-TIME EMPLOYEES

Q.E. Isl.	<u>Northwest Territories</u>		Mack- enzie	Yukon Terr.	TOTAL	REMARKS
	Rest of Frankl.	Kee- watin				
1	-	-	-	-	1	
-	1	-	-	13	14	
-	-	-	-	6	6	
-	<u>1</u>	-	-	<u>19</u>	<u>20</u>	
-	-	-	3	1	4	
-	-	-	-	-	-	
-	111	70	-	-	181	
-	12	2	518	-	532	
-	-	-	-	49	49	
-	<u>123</u>	<u>72</u>	<u>518</u>	<u>49</u>	<u>762</u>	
-	-	1	1	-	2	
-	<u>123</u>	<u>73</u>	<u>522</u>	<u>50</u>	<u>768</u>	
-	10	-	94	15	119	
-	-	-	3	-	3	
-	-	-	-	-	-	
-	1	1	11	21	33	
-	1	1	11	21	33	
-	-	-	17	17	34	
9	26	16	82	57	190	
39	208	39	163	123	572	
-	-	-	-	-	-	
<u>39</u>	<u>208</u>	<u>39</u>	<u>163</u>	<u>123</u>	<u>572</u>	Ships' crews - Northern Operations
-	-	-	-	8	8	
<u>148</u>	<u>432</u>	<u>139</u>	<u>1197</u>	<u>1862</u>	<u>3778</u>	

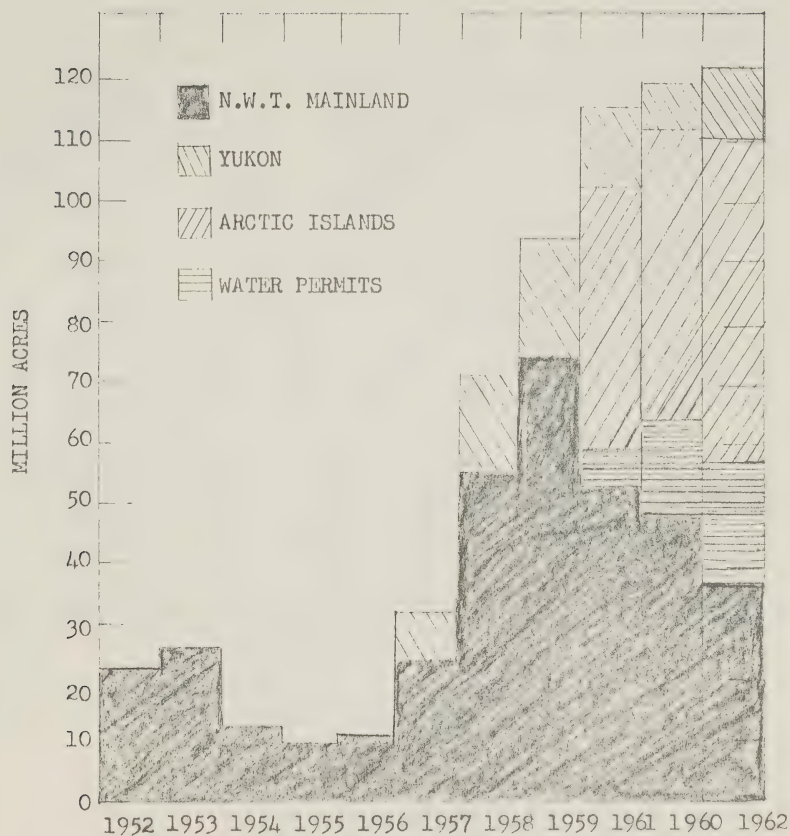
VALUE OF MINERAL PRODUCTION  
NORTHWEST TERRITORIES  
1951-1962



VALUE OF MINERAL PRODUCTION  
YUKON TERRITORY  
1951-1962



## ACTIVE PERMITS 1952-1962

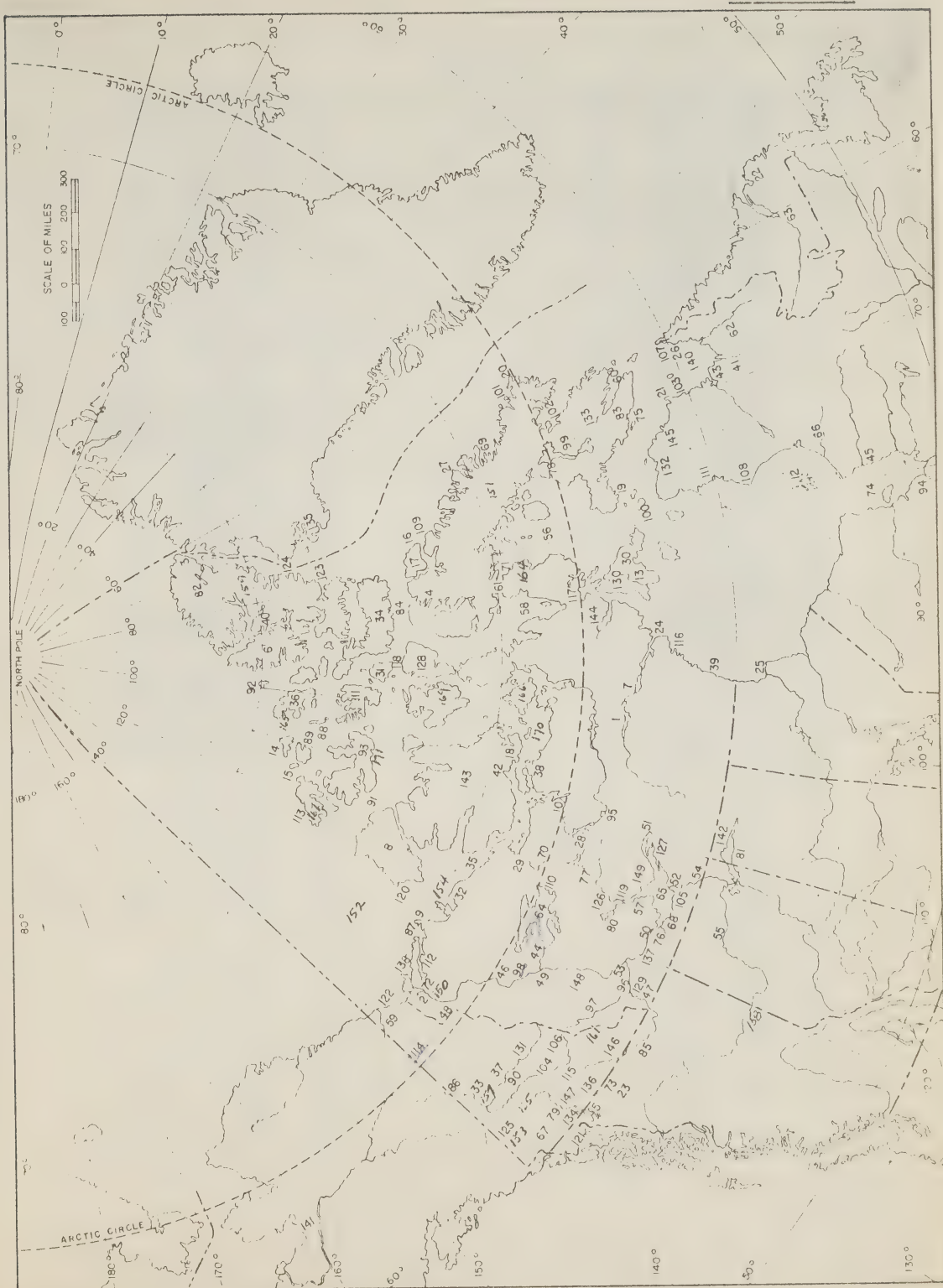


VALUE OF CRUDE PETROLEUM  
NORTHWEST TERRITORIES  
1951-1962



VALUE OF NATURAL GAS PRODUCTION  
NORTHWEST TERRITORIES  
1951-1962





## LEGEND

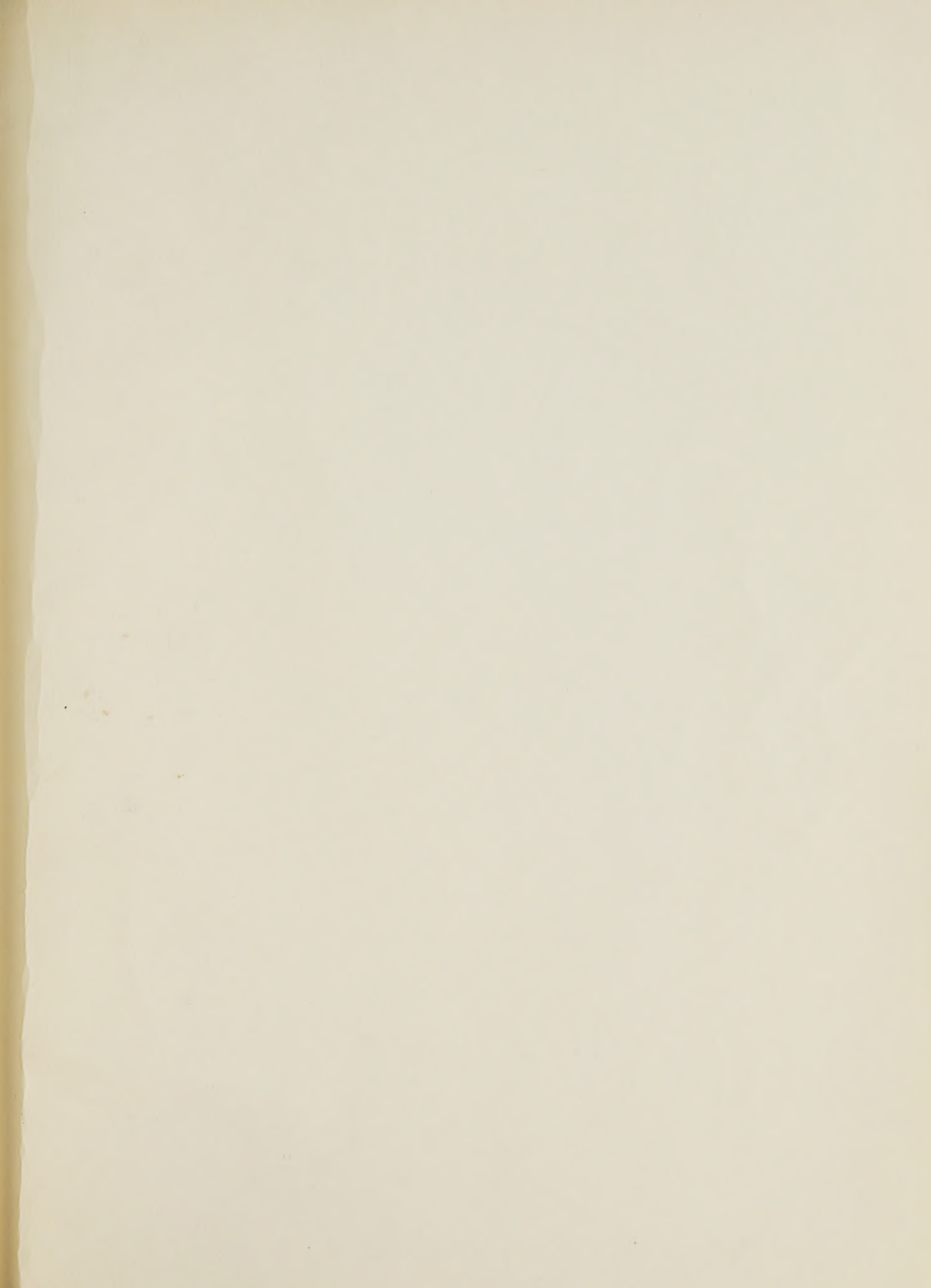
1. Aberdeen Lake
2. Aklavik
3. Alert
4. Arctic Bay
5. Atlin Lake
6. Axel Heiberg Island
7. Baker Lake
8. Banks Island
9. Bathurst Cape
10. Bathurst Inlet
11. Bathurst Island
12. Belcher Island
13. Boas River
14. Borden Island
15. Brock Island
16. Button Point
17. Bylot Island
18. Cambridge Bay
19. Cape Dorset
20. Cape Dyer
21. Cape Hopes Advance
22. Cartwright
23. Cassiar
24. Chesterfield Inlet
25. Churchill
26. Coates Inlet
27. Cape Christian
28. Contwoyto Lake
29. Coppermine
30. Coral Harbour
31. Cornwallis Island
32. Darnley Bay
33. Dawson
34. Devon Island
35. Dolphin and Union Strait
36. Ellef Ringnes Island
37. Elsa
38. Enterprise Cape
39. Eskimo Point
40. Eureka
41. False River
42. Ferguson Lake
43. Fort Chimo
44. Fort Franklin
45. Fort George
46. Fort Good Hope
47. Fort Liard
48. Fort McPherson
49. Fort Norman
50. Fort Providence
51. Fort Reliance
52. Fort Resolution
53. Fort Simpson
54. Fort Smith
55. Fort Vermilion
56. Foxe Basin
57. Frank Channel
58. Franklin Bay
59. Firth River
60. Frobisher Bay
61. Fury and Hecla Strait
62. George River
63. Goose Bay
64. Great Bear Lake
65. Great Slave Lake
66. Great Whale River
67. Haines Junction
68. Hay River
69. Home Bay
70. Husky Lakes
71. Igloodik
72. Inuvik
73. Iron Creek
74. James Bay
75. Juet Island
76. Kakisa River
77. Knob Lake
78. Koukdjuak River
79. Laberge Lake
80. Lac La Martre
81. Lake Athabasca
82. Lake Hazen
83. Lake Harbour
84. Lancaster Sound
85. Liard River
86. Little Gold Creek
87. Liverpool Bay
88. Loughheed Island
89. Mackenzie King Island
90. Mayo
91. McClure Strait
92. Meighen Island
93. Melville Island
94. Moosonee
95. Muskox Lake
96. Nahanni Butte
97. Nahanni River
98. Norman Wells
99. Nettilling Lake
100. Nottingham Island



101. Padloping Island  
102. Pangnirtung  
103. Payne Bay  
104. Pelly River  
105. Pine Point  
106. Pleasant Camp  
107. Port Burwell  
108. Port Harrison  
109. Pond Inlet  
110. Port Radium  
111. Povungnituk  
112. Ptarmigan Point  
113. Prince Patrick Island  
114. Old Crow  
115. Quiet Lake  
116. Rankin Inlet  
117. Repulse Bay  
118. Resolute  
119. Rae  
120. Sachs Harbour  
121. Skagway  
122. Shingle Point  
123. Smith Bay  
124. Smith Sound  
125. Snag  
126. Snare River  
127. Snowdrift  
128. Somerset Island  
129. South Hahanni  
130. Southampton Island  
131. Stewart River  
132. Sugluk

133. Sylvia Grinnell River  
134. Tagish  
135. Thule  
136. Teslin  
137. Trout Rock  
138. Tuktoyaktuk  
140. Ungava Bay  
141. Unalakleet  
142. Uranium City  
143. Victoria Island  
144. Wager Bay  
145. Wakeham Bay  
146. Watson Lake  
147. Whitehorse  
148. Wrigley  
149. Yellowknife  
150. Arctic Red River  
151. Baffin Island  
152. Beaufort Sea  
153. Beaver Creek  
154. Cape Parry  
155. Carmacks  
157. Dawson City  
158. Dawson Creek  
159. Ellesmere Island  
161. Flat River  
164. Hall Lake  
165. Isachsen  
166. King William Island  
167. Mould Bay  
169. Prince of Wales Island  
170. Queen Maud Gulf  
171. Winter Harbour





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